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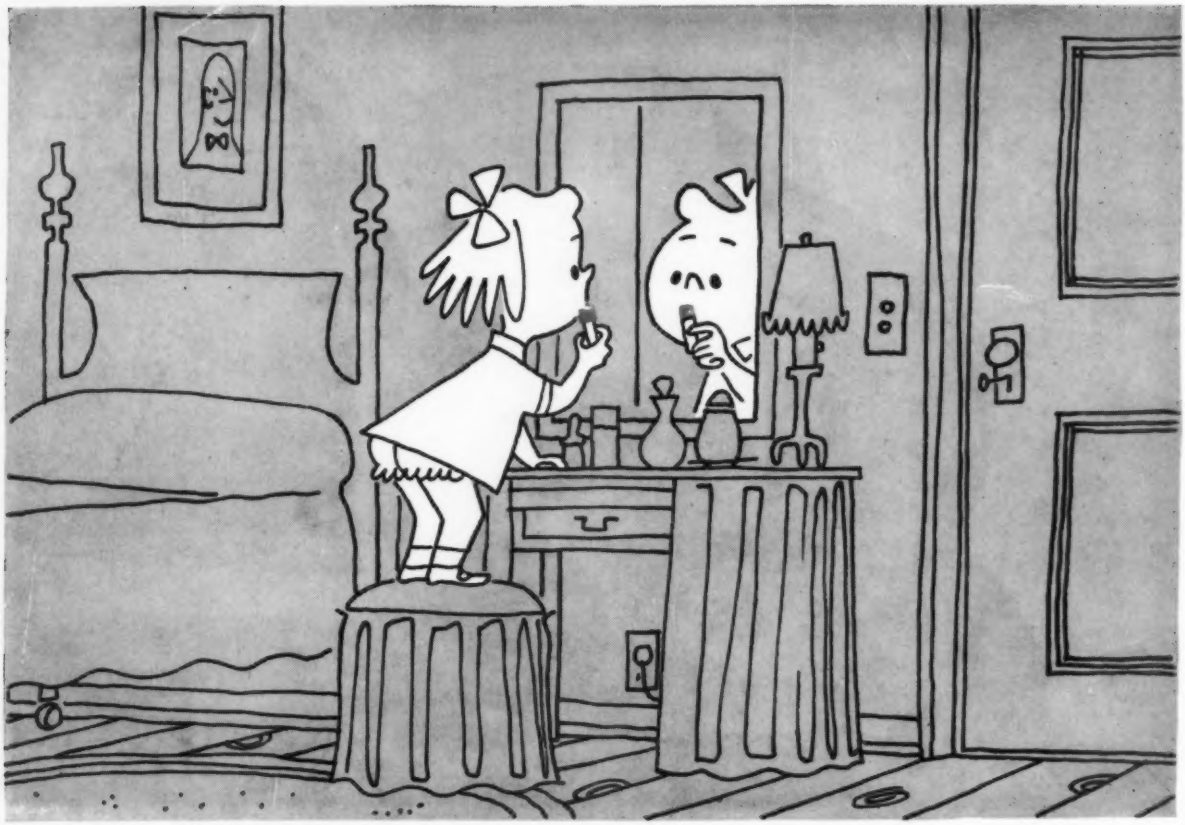

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Drug and Cosmetic Industry

January 1954. Vol. 74. No. 1.

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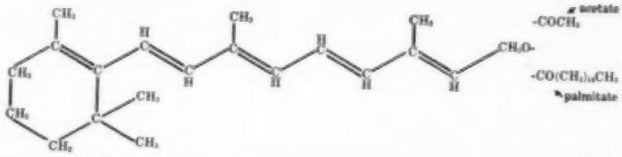
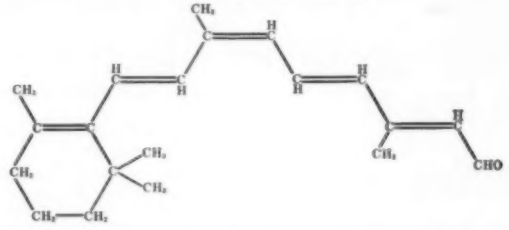


That it helps people and animals grow properly and maintain their epithelial tissues in sound condition has long ago passed out of the area of doubt. Instead of just taking these wonderful attributes for granted, we maintain a staff of organic chemists, biochemists, and biologists who keep busy putting out papers, correspondence, and samples to their scientific colleagues interested in exploring the molecular architecture represented above.

It turns out, for example, that in the body some of the vitamin A develops a twist and turns up in the retina of the eye in a *cis* form of the aldehyde, possibly:



In the dark this—and only this—combines with the protein opsin to form the pigment rhodopsin. The action of light in bleaching the rhodopsin back to vitamin A aldehyde and opsin is responsible for our ability to see in dim light. The strange thing is that when the vitamin A aldehyde comes out of the rhodopsin it is back in the straight, all-*trans* form preferred by nature's and man's synthetic processes.

It is not at all strange that the famous university biologist who reported this turned to us for certain of the data and experimental preparations of vitamin A isomers which he needed in his research. Doing and assisting basic research we regard as part of the responsibility that comes to us as old hands in the vitamin A field.

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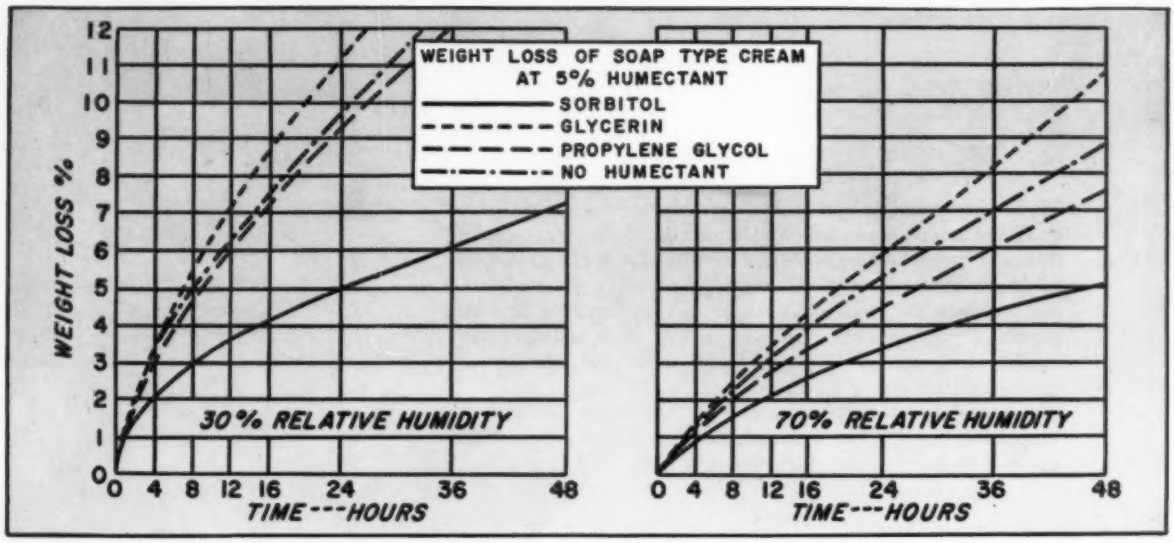


Sorbitol reduces weight loss of creams during production

The moisture-stabilizing action of sorbitol and other conditioners in cosmetic creams is demonstrated by the results of laboratory tests made at the Atlas Central Research Laboratory. A typical O/W stearic acid soap-type cream was used as the basis of comparison. Three versions of the basic formula were prepared, utilizing sorbitol and two other widely used polyols as the humectant ingredient. Each humectant was tested at levels ranging from 2 to 20 per cent.

Weight loss was measured at regular intervals, during exposure to humidities of 30, 50 and 70 per cent relative humidity. Control samples of cream containing no humectant at all were subjected to similar exposure.

Typical test curves at 5% humectant are shown above. As can be seen, sorbitol protects against weight loss more effectively than do the other polyols both at low relative humidities and high, on this particular soap-type of cream. This is particularly important during production, where overnight or week-end moisture loss of batches in process can materially reduce poundage output.

Other information on the use of sorbitol in cosmetics is given in an article, "Hygroscopic Agents and Their Uses in Cosmetics." We'll be glad to send a copy on request, and to lend technical assistance in the application of sorbitol to your own formulations.

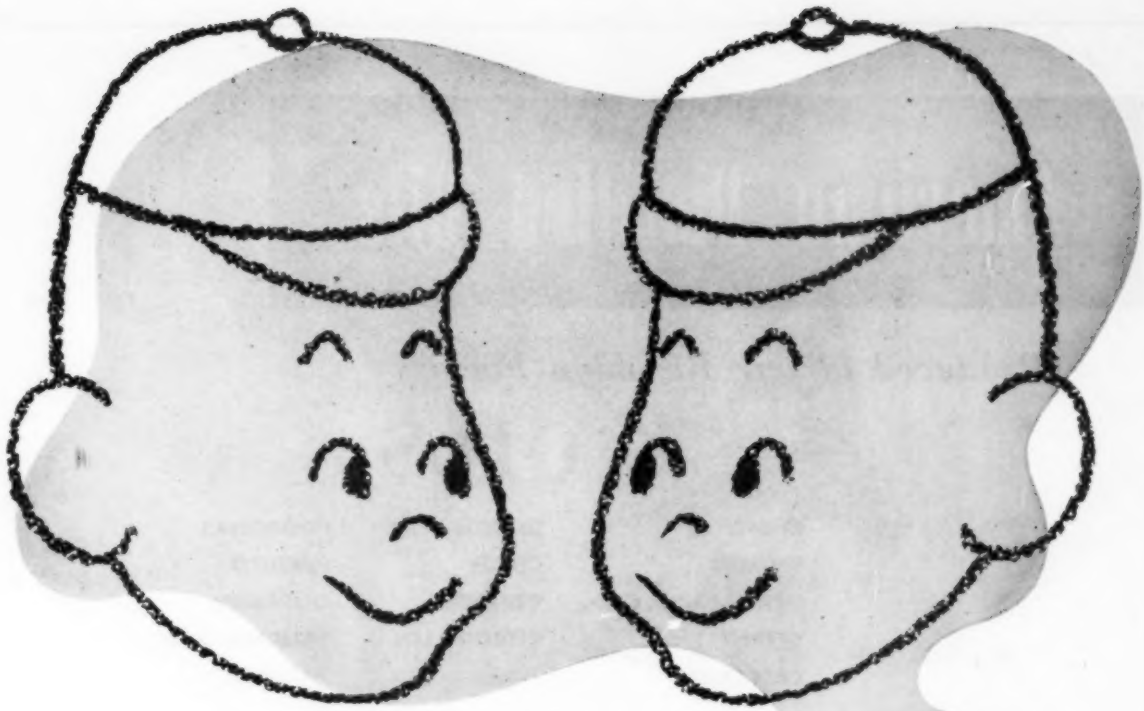
Stable emulsions for anti-perspirant creams

Atlas non-ionic emulsifiers, in particular, Myrj 59 or combinations of Myrj 52 with Atlas G-2162, have been found suitable for producing stable emulsions in anti-perspirants based on stearic acid, in the presence of 20% or more salts and other electrolytes. The emulsions formed are white, and leave no residue on the skin or clothes. Texture is excellent, and remains smooth throughout long use life.

The following is a typical formula containing a minimum of waxy materials which tend to inhibit astringent action. Sorbo® (70% D-sorbitol solution) is included to retard moisture loss and to preserve texture during storage.

A	Hystrene T-70 fatty acid	10%
	Cetyl alcohol	2%
	Myrj 59	3%
B	Sorbo	10%
	Water	35%
	Preservative	q.s.
C	Perfume	q.s.
D	Aluminum chlorhydroxide complex, 50% solution	40%

Heat (A) to 70°C, (B) to 75°C. Agitate (A) and add (B) slowly. After emulsification is complete, stir slowly to 50°C and add (C). Add (D) slowly, with agitation, then pack.



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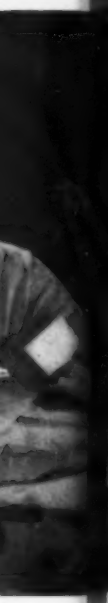

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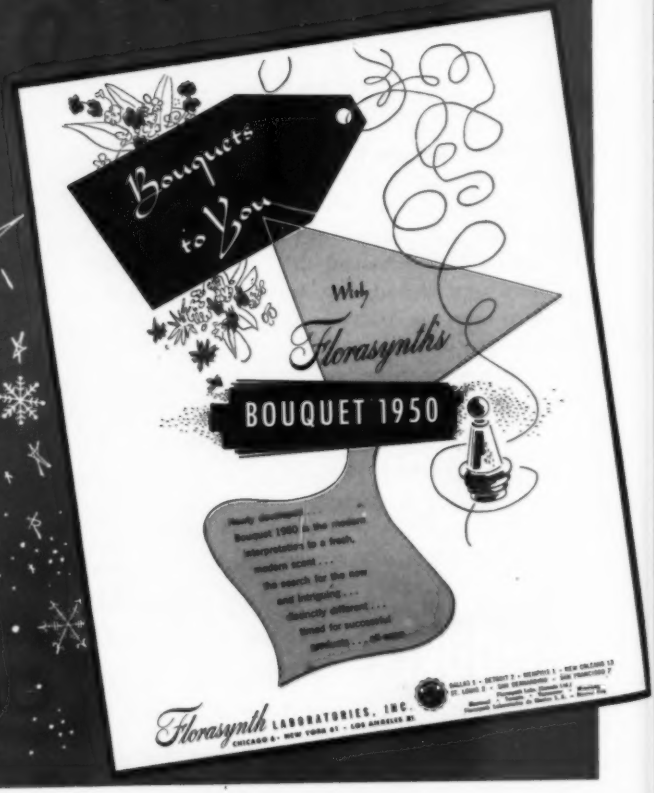

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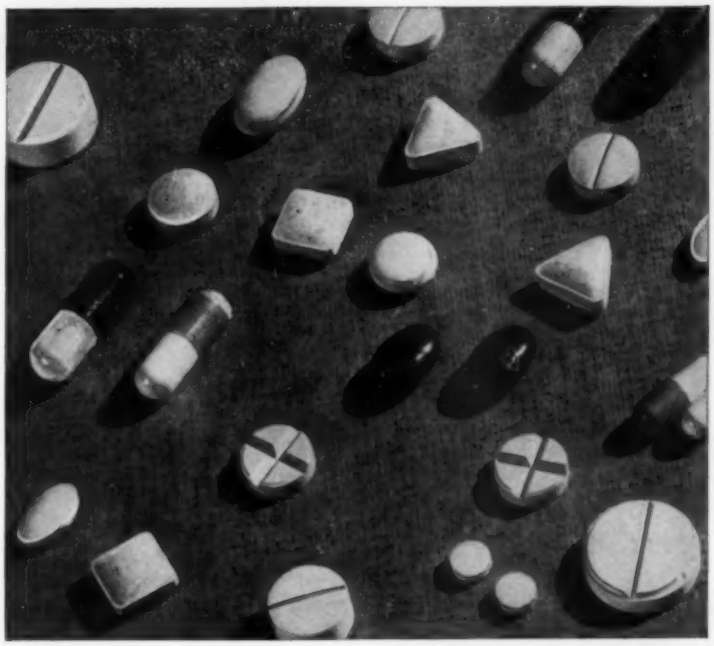

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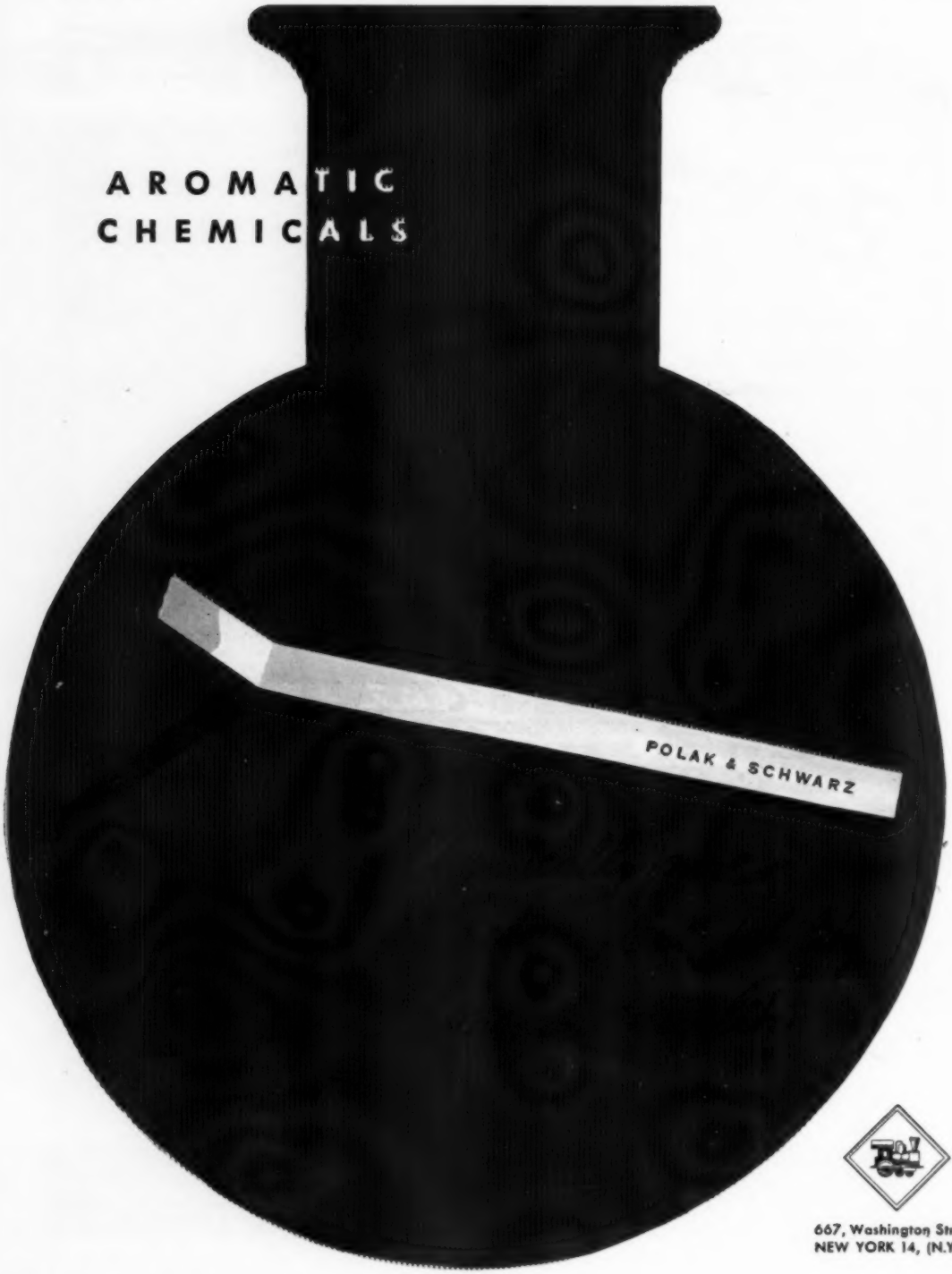

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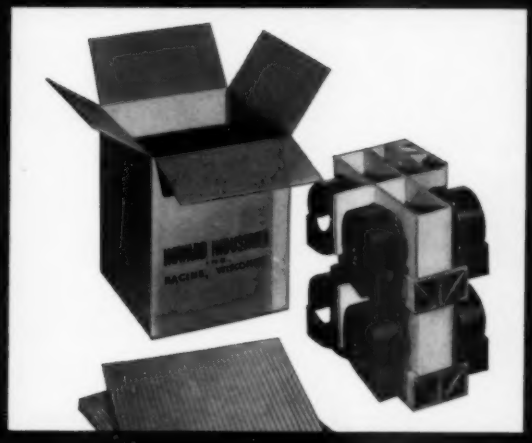

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Synthetic Chemicals, and all of those creations and specialties
which combine industrial aromatics with natural products
and produce fragrance, the House Chiris has a cherished history.
Today Chiris maintains laboratories headed by experienced
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Whether Essential Oils, Isolates, or combinations thereof,
are used as fragrance constituents by the perfumery,
soap, cosmetics, or allied industries,
we are happy to be consulted.

*Chemical Senses, page 1, Moncrief—lists senses as follows: "sight, hearing, touch, taste, smell." Note smell is listed Fifth.

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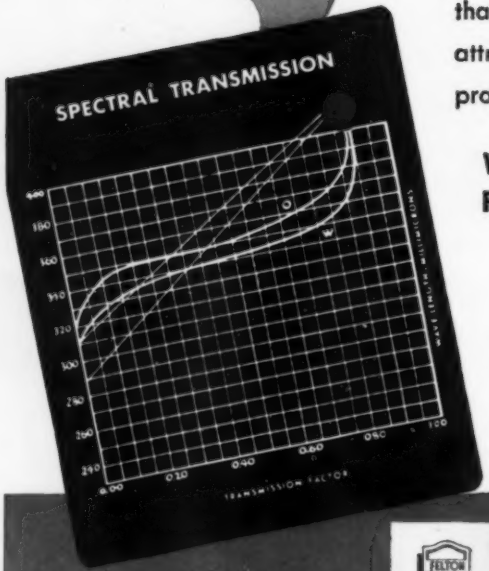

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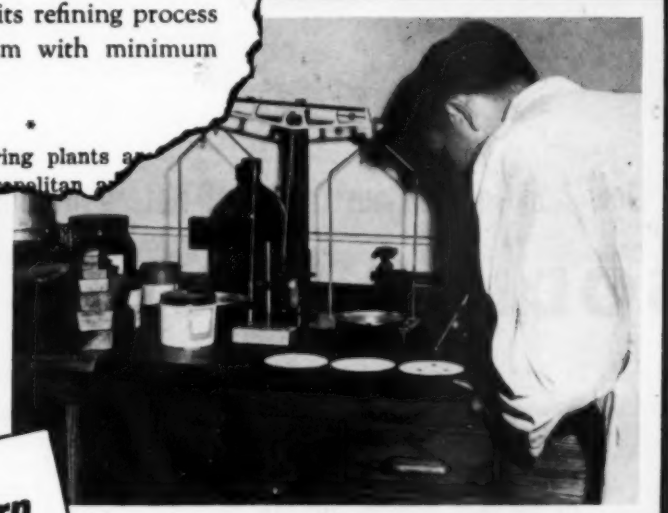

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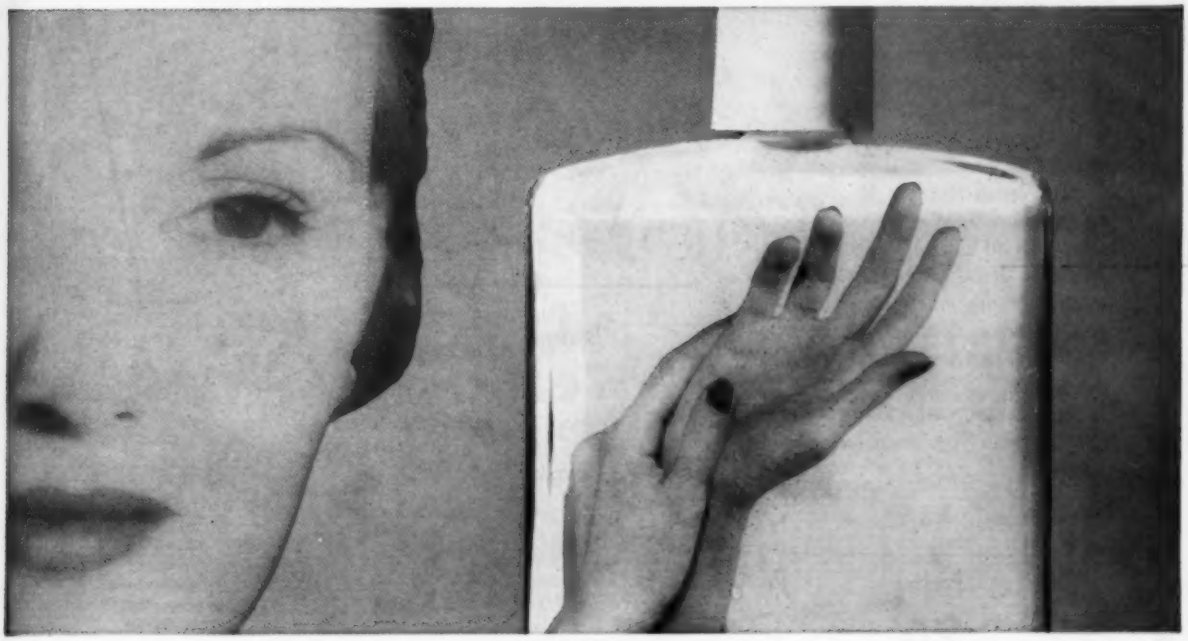

It's the soothing and softening effect without residual stickiness that determines a woman's preference when she buys a lotion. You can easily put your lotion on her preferred list by altering your formula, probably only slightly, to use propylene glycol, U.S.P.—with even a possibility of replacing a more expensive ingredient. Product improvement with lower cost sounds like a combination well worth investigating, doesn't it?

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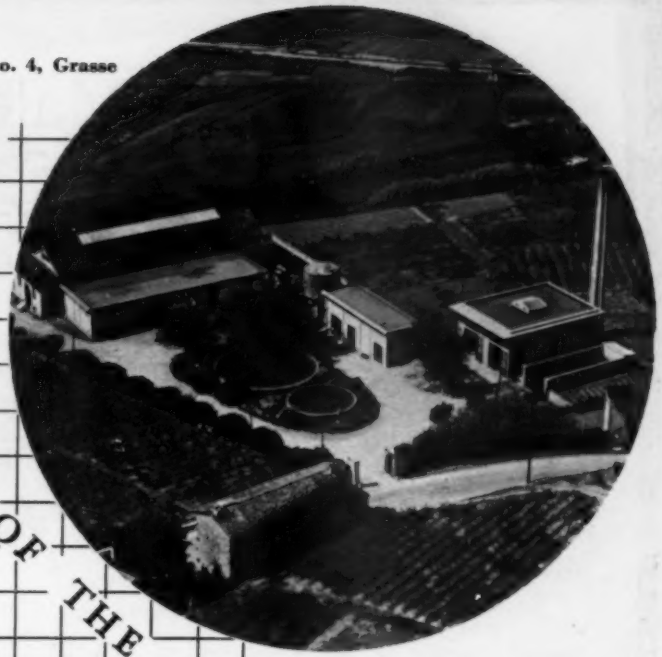

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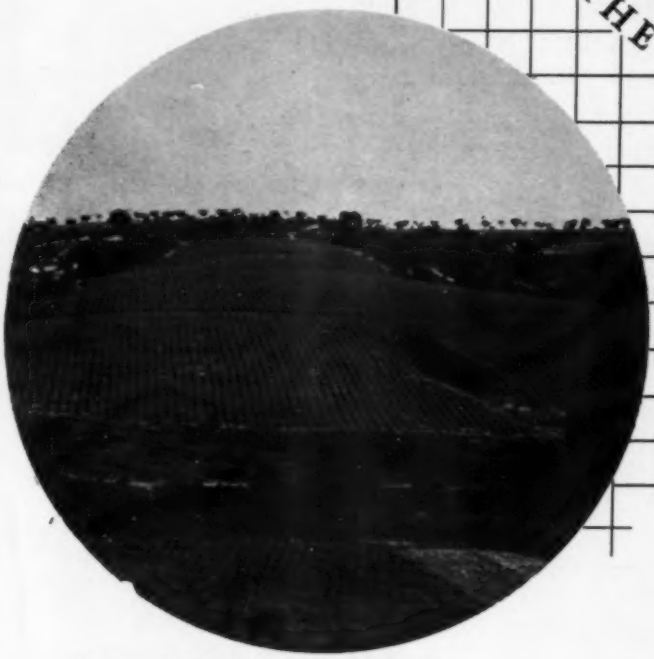

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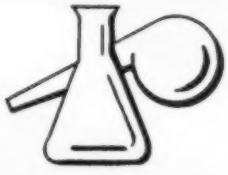
Dr. Otto Jacobi and Miss Gertrude Lantzsch examining subject

Shown here, studying the effects of a cosmetic on the skin surface, blood capillaries and skin temperatures of a subject, are Dr. Otto Jacobi, *right*, and Miss Gertrude Lantzsch, *left*.



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As a result, Dr. Heinrich arranged that Dr. Jacobi and Miss Gertrude Lantzsch, who has been his assistant for 10 years, bring their entire laboratory to Milwaukee, including many special instruments developed by Dr. Jacobi.

This modern laboratory has been set up at the medical school of Marquette University where ideal working conditions, plus many technical advantages for fundamental cosmetic research are available.

Dr. Jacobi has specialized in skin physiology for 15 years. He studied at the University of Frankfurt am Main—Freiburg, Switzerland—and the University of Giessen, Germany. He is the author of 20 technical papers on the behavior and reaction of normal skin and the influence of cosmetics on normal and sub-normal skin.

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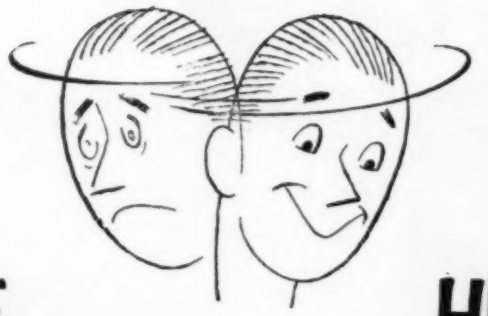

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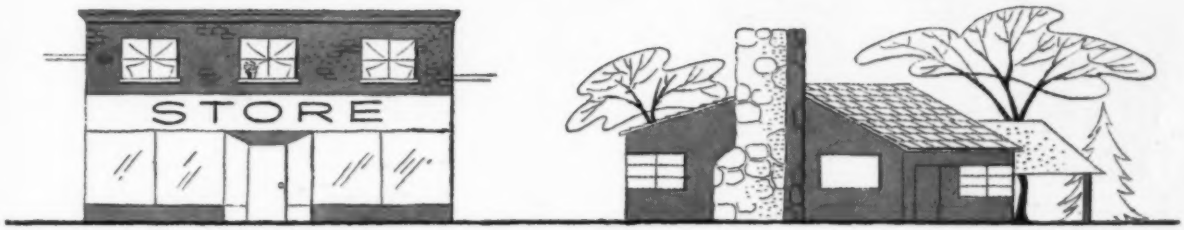

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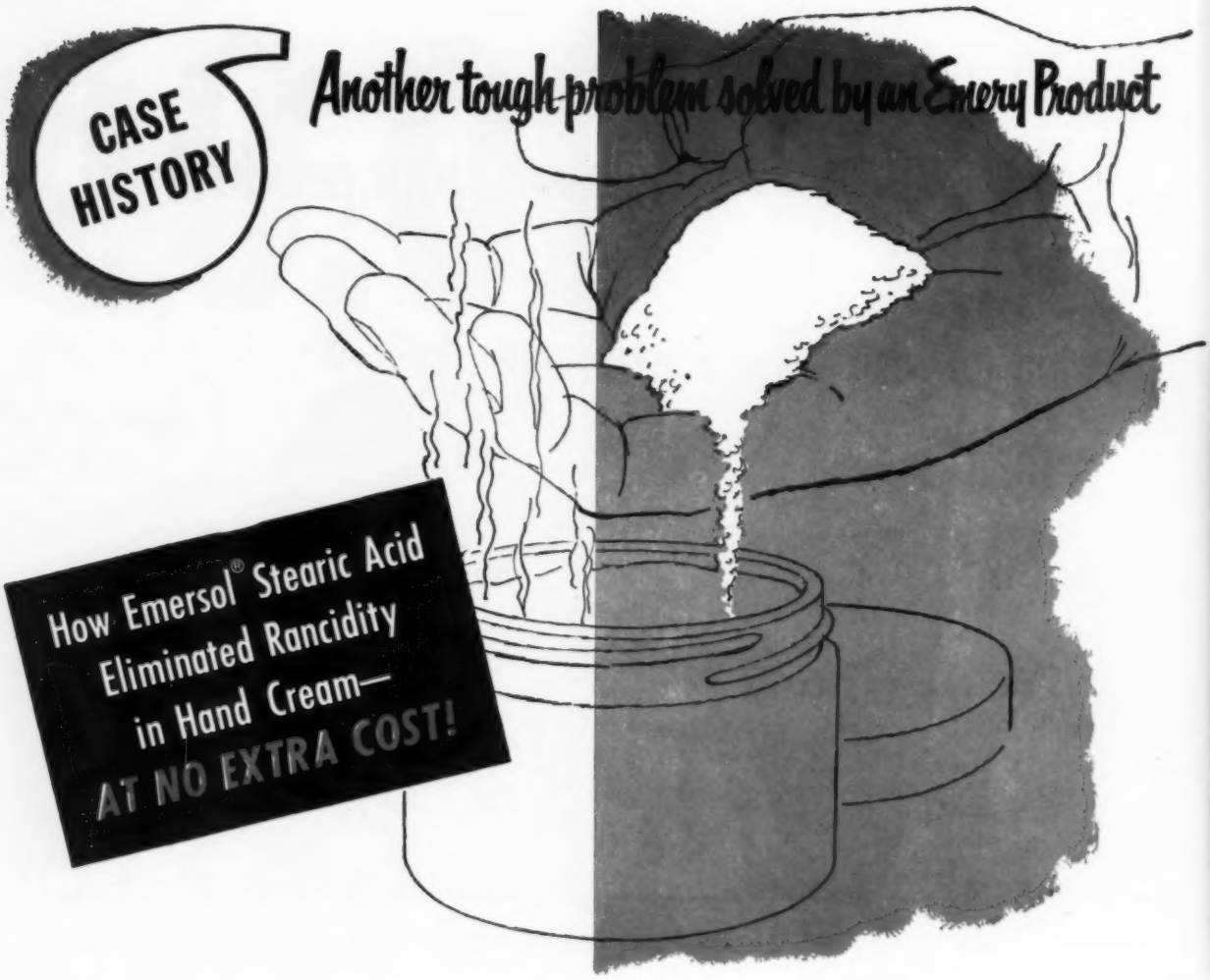

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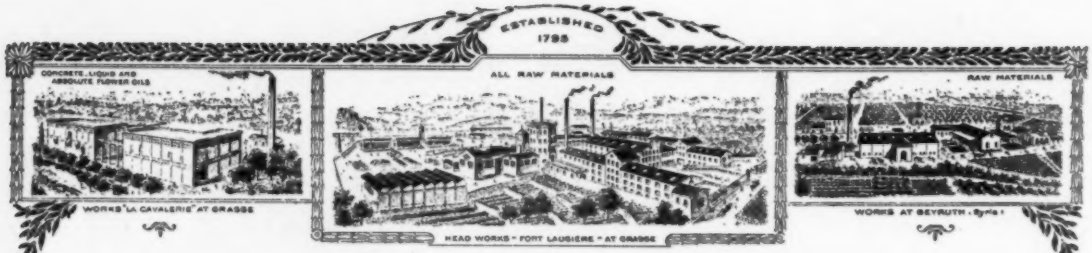
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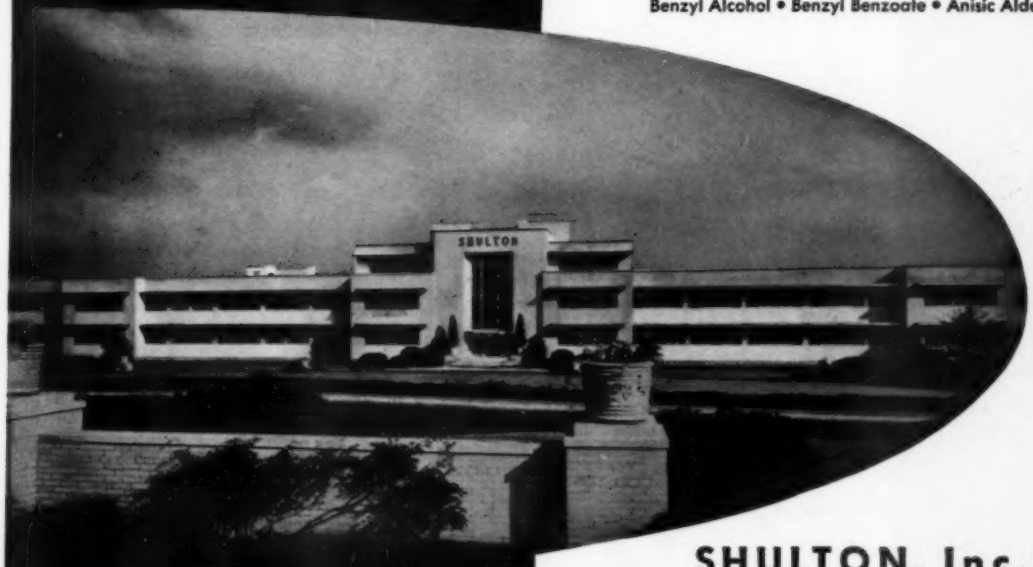

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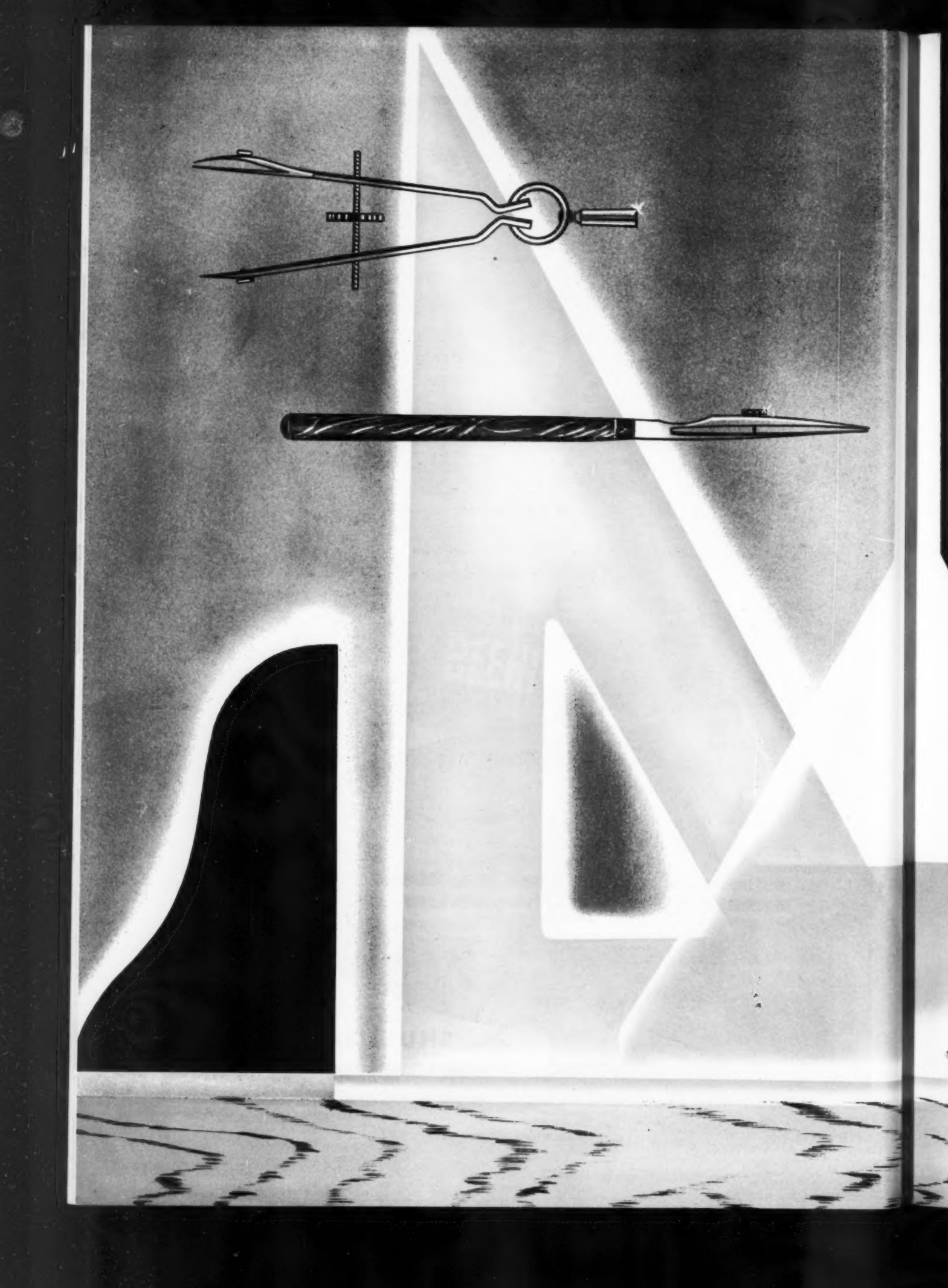

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I've got it, gentlemen, a peppermint tooth paste that comes out of the tube in red and white stripes.

Drug Trade Conference

As the result of a report on the operations of the World Health Organization given by John J. Horan, counsel of Merck & Co., who participated in the meetings of WHO last Summer, the National Drug Trade Conference adopted a resolution expressing concern over the activities of WHO. Mr. Horan spoke mainly with respect to the proposed International Pharmacopoeia and said that WHO, by its sponsorship of this pharmacopoeia, is in a position to control the labeling of drugs and thereby greatly affect the exportation of drugs from this country. The resolution recommended that the state department urge WHO to revise its operations and revise procedures along lines similar to those undertaken with respect to the selection of non-proprietary names. It was proposed that all interested persons be given a full and adequate opportunity to comment on proposals for inclusion in the IP, that the word "pharmacopoeia" be dropped from the name, and that the title page include a statement that the standards are intended to be advisory only.

The Conference also adopted a resolution on drug substitution which was said to express the nearest approach to a unanimous agreement on the subject that could be reached at this time. The resolution urges members of the Conference to continue opposition to substitution, at all levels in the drug industry; it urges the industry and the profession of pharmacy to unite in the consideration of this problem so that legislation on the problem can be prepared, and that such legislation to curb substitution take the form of amendments to existing laws regulating pharmacy and commerce in drugs rather than separate laws.

A third resolution adopted by the Conference at its annual meeting held in Washington on December 5, proposes an amendment to the Harrison narcotic act to permit dispensing of codeine preparations on oral prescription when the Bureau of Narcotics finds that this will not be against the public interest.

Carson P. Frailey, former executive vice-president of the American Drug Manufacturers Association, was reelected president of the Council. Dr. Frederick J. Cullen, executive vice-president of the Proprietary Association, was reelected vice-president of the Council, and Ray C. Schlotterer, of the Federal Wholesale Druggists Association, was reelected secretary of the Council. The executive committee of the Council, as appointed by Dr. Frailey, consists of the following: Dr. Robert P. Fischelis, American Pharmaceutical Association; Dr. Hugo Shaefer, American Association of Colleges of Pharmacy; Dr. J. O'Neill Closs, American Pharmaceutical Manufacturers' Association; Patrick H. Costello, National Association of Boards of Pharmacy; Carl Willingham, National Association of Chain Drug Stores; George H. Frates, National Association of Retail Druggists; E. Allen Newcomb, National Wholesale Druggists Association; Dr. Cullen for the Proprietary Association, Dr. Frailey for the A.D.M.A., and Mr. Schlotterer for the F.W.D.A.

Loynd Looks Ahead

"All branches of the medical and pharmaceutical are pursuing aggressive research programs, and fulfillment of many projects—representing years of work—can be expected next year (1954)," said Harry J. Loynd, president of Parke, Davis & Company last month. He continued:

"Despite some talk about the possibility of a general business adjustment, we are optimistic about the prospects for the pharmaceutical industry, which is fundamental business.

"One of the most encouraging facts is the greatest population boom in U.S. history. There have been big increases at both ends of the population scale. There are 12,500,000 persons over 65 now, as a result of health and medical advances in recent years, and it is estimated there will be 16,000,000 by 1960. The growth of this population segment and an increased number of retirement and pension funds mean substantial markets for all kinds of consumer needs, especially those developed to improve the health and welfare of the people.

"At the other end of the scale, there are nearly 4,000,000 babies born each year. Added to the approximately 40,000,000 boys and girls under 14 now, they represent a potent market for infants' and childrens' needs.

"In the year ahead, and in the next decade, lies a great new world of expanded professional service. We are confident our industry has the vision and foresight to meet this challenge with intelligent planning and production."

FDA Would Discontinue Colors

The Food and Drug Administration, after a long period of investigation and after many conferences, finally reached the stage of calling of a hearing to consider the removal from the market of three coal-tar colors, the use of which has been permitted in foods, drugs, and cosmetics. The colors being considered at the hearing in Washington on January 19 are FD&C Red 32; FD&C Orange 1; and FD&C Orange 2. If these colors are removed from the certification list, they cannot be used in drugs or cosmetics, except in coal-tar hair dyes which bear the standard cautionary statement on the label. The Toilet Goods Association is intervening in the matter with the plea that these colors be not completely removed from the market but that they be reclassified as D&C colors, use of which is permitted in drugs and cosmetics. While not used to any great extent in this industry, these colors are used in the formulation of some cosmetics.

DCAT Adopts Resolutions

The matter of the World Health Organization's proposed International Pharmacopoeia was the subject of a resolution adopted last month by the executive committee of the Drug, Chemical and Allied Trades Section, New York Board of Trade. The resolution reads:

BE IT RESOLVED that the DCAT chairman is hereby authorized to designate a representative of this organization to act in its behalf in matters pertaining to the program of the World Health Organization involving the compilation and issuance of a drug compendium to be known as the Internation Pharmacopoeia, (1) to the end that the interests of the American drug manufacturers are adequately considered in the setting up of drug specifications by the WHO; (2) that such specifications conform generally and insofar as possible with those in the formularies currently in use in this country and (3) that any such proposed specifications to be made subject to review by representatives of the American drug and chemical industries before their adoption and publication.

Two other resolutions adopted by DCAT have to do with bulk shipments of new drugs, and with export restrictions, both under the Federal Food, Drug, and Cosmetic Act. These resolutions follow:

BE IT RESOLVED that it is the sense of the DCAT that the Federal Food and Drug Administration, through its current interpretation of the Federal Food, Drug and Cosmetic Act, is placing undue and impractical restrictions on the bulk shipment of drugs and and medicinal chemicals which in dosage form and for particular purposes might fall within the definition of "new drugs" since under the present requirements of FDA an exportation of such a bulk drug or medicinal chemical, may not legally be made unless the bulk exporter has registered the drug or chemical in dosage form as a "new drug" under Sec. 505 of the Act.

BE IT RESOLVED that the DCAT is opposed to any amendment of Section 801(d) of the Federal Food, Drug and Cosmetic Act designed to eliminate the broad exemption from labeling and other requirements of the Act now available in that Section for drug exports and,

BE IT FURTHER RESOLVED that these views of the Section be communicated to Congressman Wolverton with the request that no hearings be scheduled on the bill (H.R. 6550) which he introduced in Congress to effect such an amendment of the Export Section of the Act.

Fair Trade Again in Favor

Fair trade seems to again be in favor in the courts. Since the enactment of the McGuire Act and its approval by the U. S. Supreme Court in the Lilly-Schwegmann case, the courts of the various states are, for the most part, backing up fair trade legislation. On December 21, the New Jersey Supreme Court ruled that fair trade has been reestablished for interstate commerce and against non-signers of fair trade contracts. The New Jersey decision held that that state's fair trade act, enacted in 1935, need not now be reenacted to come under the interstate benefits of the McGuire Act. It will be recalled that the Supreme Court of Georgia ruled otherwise. General Electric and Sunbeam were the litigants in these New Jersey cases. According to a statement of the Bureau of Education on Fair Trade following these decisions:

"The New Jersey decision is the latest in a long series of victories which the fair trade laws have won in the highest State and Federal courts in the 22 years of fair trade's existence. The Supreme Courts of 15 states have upheld the constitutionality of fair trade. The California high court has sustained fair trade twice, and the New Jersey Supreme Court, three times, including this latest decision. In addition, the U. S. Supreme Court unanimously upheld fair trade in its Old Dearborn decision of 1936 and twice in the past two months, refused to review the Fifth U. S. Circuit Court of Appeals ruling that fair trade was constitutional, given in the case of Schwegmann Bros. v. Eli Lilly & Company."

F.T.C. and Cosmetics

The Trade Practice Conference held in New York by the Federal Trade Commission last month to consider revision of the rules for the cosmetic and toilet goods industry was of short duration. The revisions, having to do with bringing the rules into conformity with the Commission's recent change of view on use of the word "free," and also having to do with liberalizing the push money rule, were approved by those in attendance.

Commissioner Lowell B. Mason presided, and he emphasized that the Commission seeks to bring about compliance with the rules by means of cooperation rather than by costly, time-consuming litigation. He urged manufacturers to educate their reselling customers regarding the provisions of the rules. He further suggested that in the event "prestige" retailers put too much pressure on manufacturers for more than their fair share of promotional payments and allowances, a conference be held by the manufacturer, the "pressuring" retailer, and a representative of the Commission Compliance Division.

Commissioner Mason indicated that the Commission is about to hand down an important decision placing a more liberal interpretation on the granting of promotional allowances under the Robinson-Patman Act, and hence, under the cosmetic rules. The pending case involves the question of whether a manufacturer can

legally make available promotional allowances for special services and functions to some customers, even if the same or similar type special services and functions cannot be provided by all competing customers, who, therefore, would not be entitled to promotional allowances for the same. The pending case also involves the proposition of whether a manufacturer should be permitted to evaluate the merit and worth of promotional services performed by resellers for the benefit of the manufacturer, in determining the amount of promotional allowance to be paid for such services.

Tintair Pays Debts

Bymart-Tintair, Inc., which a year ago had long term obligations to trade creditors amounting to $172,885, has reduced this indebtedness to $9,664, Martin L. Strauss II, chairman of the board, announced late last month. Payments to creditors were not due until September 1, 1954 and September 1, 1955. Mr. Strauss also announced that during the past year the indebtedness on the company's senior serial notes had been reduced by $15,100, and would be reduced January 1, 1954 by an additional $22,500. "As a result of improvements in the company's business," he said, "the directors have approved the resumption of regular dividends on the preferred stock." The second of such five per cent dividends was payable December 15 to stockholders of record December 11.

Medical Cost Financing Survey

The findings of a study into the methods used by the people of this country to meet their medical bills is now available in a 500-page book published by the Columbia Press. Conducted under a grant of $92,000 made by the Health Information Foundation to Columbia University, this is said to be the first independent, objective survey of health care costs by a trained scholar, and documents many facts heretofore discussed as opinion. Directed by Dr. Oscar N. Serbein, assistant professor of statistics in the Columbia University Graduate School of Business, the study was published December 30th under the title, Paying for Medical Care in the United States. The price is $7.00.

According to Admiral W. H. P. Blandy, president of the Foundation:

"Dr. Serbein's study is of unusual significance because more than 91,000,000 people now finance varying proportions of their hospital, surgical and medical care by means of prepayment methods.

"The volume discusses at length various kinds of voluntary health insurance commonly referred to as 'third party payments' directing all its attention to the number of persons having protection, the extent of benefits provided, and the types of insuring organizations—Blue Cross, Blue Shield and private insurance companies—through which protection is obtained.

"A close look is given to the extent to which health services are financed by the public through tax funds at the Federal, State and local level. The role business plays in providing health services for its employees is also carefully scrutinized. Projecting the growth of voluntary health insurance Dr. Serbein estimates a potential coverage of about 85 per cent of the nation's population.

"No such comprehensive study has been made covering the twenty years during which health insurance has had its phenomenal growth, becoming the major source of revenue for the nation's hospital facilities. The Foundation undertook the project two years ago as a contribution to the extension and improvement of protection which may be made available to the American people through voluntary health insurance."

A million-dollar research and public information program on medical care costs is currently being sponsored by Health Information. The Columbia University study is a background survey in this over-all program. Late in January the results of a national consumer survey of illness costs actually incurred by families, the extent to which health insurance is helping to meet costs, and the extent of medical debts, will be made public. This survey will provide for the first time in twenty years a comprehensive, nation-wide picture of medical costs, about which little or no accurate information has been available.

New Georgia Fair Trade Act

A bill to restore fair trade in Georgia received a favorable vote in the Georgia lower house of 112 to 3, and in the Georgia Senate of 38 to 3. The new bill, designed to overcome the objections raised by Georgia's Supreme Court to the previous fair trade law in the Oneida v. Gray-Robinson Stores case, contains an added safeguard to insure competition under fair trade. This provision empowers the state attorney general to seek suspension through court action of any fair trade contracts covering trade-marked articles which are deemed by him not to be in competition with articles of the same general class produced by others.

Views on Geriatrics

Life expectancy at birth, now a record 68.5 years, will soon increase substantially, and active, vigorous men and women of 85 or more will form a substantial part of every American community within a generation, predicts Dr. Charles E. Dutchess, medical director of Schenley Laboratories and an authority in the field of geriatrics. In a recent address before the Ohio Chapter of the International Association of Personnel in Employment Security, Dr. Dutchess said that recent medical discoveries employed while people are still healthy and vigorous will prolong the lives and productivity of thousands.

"The two decades from 40 to 60 are the critical years," he said, "when the silent forces which later cause old-age disabilities first show themselves. But new knowledge and new tools now enable us to recognize these regenerative changes and take the proverbial stitch in time."

Dr. Dutchess listed the vitamin B factors and the amino acids as "bright weapons" in the fight against degenerative old age. He also called attention to the use of hormones, such as thyroid and sex hormones, as invaluable aids in treating the aging patient.

The most serious problem in geriatric medicine is overweight, he added, a condition most likely to appear between 40 and 60.

"The fact that it is common for people to gain weight after 40 does not mean that it is normal or desirable.

The patient must realize that his metabolism is slowing down. He must not resort to over-eating in order to seek emotional satisfaction."

FTC Bans Appliance Claims

Misleading statements about the effectiveness of Philo Burt Appliances in the treatment of asthma, tuberculosis, arthritis of the spine, headache, sleeplessness, indigestion and various other ailments is ordered stopped by an initial decision against Philo Burt Manufacturing Company, Jamestown, N. Y., according to the Federal Trade Commission. Specifically ordered to be stopped are claims:

1. That use of its devices will cure or will be of any significant value in the treatment of extreme sensitiveness of the skin, sensations of uneasiness, tingling, girdle pains, itching, headache, sleeplessness or loss of sleep, melancholy, spine sensitive to pressure, feeling of irritation, muscular weakness, fidgets, sudden starts, cramps in the legs or abdomen, sensations of hot or cold, skin flushed or hot, clammy sweats, worry, indigestion, loss of appetite, outbursts of temper, forgetfullness, or distaste for either work or society;

2. That use of its devices will cure backache, contraction of muscles, weariness or fatigue, spinal tuberculosis, spinal irritation, spinal weakness, inflamed spine, injury to or deformity of the spine, arthritis of the spine, lordosis or spinal curvature;

3. That use of its devices is a competent or effective treatment for backache, contraction of the muscles, weariness or fatigue, spinal tuberculosis, spinal irritation, spinal weakness, inflamed spine, arthritis of the spine, lordosis or spinal curvature, unless representation is made to the cases where (a) the particular condition or symptom has been diagnosed by a competent physician as one requiring the wearing of a support, (b) the type of support sold is recommended by the physician, (c) the proper measurements have been made by the respondent, the physician, or other properly qualified person, and (d) the support is used in conjunction with other necessary treatment measures, as prescribed by the physician.

New Chlorophyll Measuring Method

A new physical-chemical method for measuring the deodorant effectiveness of chlorophyll derivatives has been announced in a preliminary report by its discoverer, Dr. George W. Rapp, Chicago. The method has been carefully checked against biological assays, according to Dr. Rapp, and shows a high degree of correlation. Most of the work thus far reported has been done on Chlorfolen, a chlorophyll derivative of Charles Bowman & Co. which is distributed to more than 100 leading dog food manufacturers by Bowman Feed Products. This product was used as a reference during development of the chemical assay method because each lot manufactured has been subjected to a careful biological assay and these biological results were made available to Dr. Rapp for comparative purposes.

The perfected physical-chemical method has been used to evaluate the deodorant effectiveness of other chlorophyll derivatives and a wide range of chlorophyll-containing products. Dr. Rapp reports that his method gives results in very close agreement with those obtained by biological assay. The necessary modifications are being prepared now and will be made available to the industry.

Dog food manufacturers can obtain copies of Dr. Rapp's method from either Charles Bowman & Co., or Bowman Feed Products, Holland, Mich. Other interested persons will be supplied as soon as reprints are available.

F.T.C. Dismisses Complaints

The Federal Trade Commission has dismissed complaints charging three soap manufacturers with unlawful discriminations in price and in the granting of promotional allowances.

The cases involve Lever Brothers Company, N. Y.; The Procter & Gamble Company, Cincinnati; and Colgate-Palmolive-Peet Company, Jersey City, N. J.

The unanimous decision—affirming a hearing examiner's initial decision and denying the appeal of counsel supporting the complaint—was accompanied by an opinion prepared by Commissioner John W. Gwynne.

Section 2(d) of the Clayton Act provides in substance that payments or allowances for advertising and promotional services must be "available on proportionally equal terms" to all competing customers.

The Commission ruled that the evidence failed to support the charges that advertising allowances offered by the three companies did not meet this requirement.

On the question of availability, Mr. Gwynne's opinion points out that the law does not sanction promotional plans "tailored to fit the needs of favored customers." But it adds that the law does not require that a comprehensive promotional plan "must be so tailored that every feature of it will be usable or suitable for every customer."

Concerning proportionality, the opinion says that while no standards are laid down in the law for accomplishing this result, it is clear that Congress was acting to outlaw the use of payments for services and facilities rendered "for the purpose of discriminating among customers." Accordingly, Mr. Gwynne said every plan providing payment for promotional services and facilities "must be honest in its purpose and fair and reasonable in its application."

The opinion further says that payments based on the number of cases of soap products sold meet the test of proportionality specified in Section 2(d) of the Clayton Act.

Noting that Section 2(d) permits payments for services or facilities actually furnished, it emphasizes that "payments for services or facilities not furnished are not authorized," nor are "payments grossly in excess of the cost or value of the services rendered."

Mr. Gwynne makes clear also that "the law does not prohibit a seller from paying for services of various types. * * * Nor does the law require a seller to pay at the same rate, per unit of products sold, for types of services which are of unequal cost or value."

This ruling was made in connection with the fact that payments made by the soap companies "covered different types of services for which a differing scale of payment was fixed—a certain amount per case for newspaper advertising, a lesser amount for handbills, and

still less for store displays. * * * Payments must be made in good faith for services or facilities actually rendered and there should be a fair and reasonable relation between the amount of the payment and the type of service rendered."

In discussing whether payments for newspaper advertising were "available" to all competing customers, the opinion says (citing as an example Lever Brothers' merchandising arrangements):

"It is well established that respondent offered to all customers payments for services rendered by newspaper advertising. That is, it made its several promotional plans known to all."

The opinion adds that each of the companies offers alternative promotional allowances for those who do not use the advertising allowances. It says these offers are made to all customers.

"In other words," the opinion says, "the newspaper advertising allowance is a part of the comprehensive plan of payment for promotional services offered by respondents to their several hundred thousand customers throughout the country. The conditions under which these customers operate, of course, vary. Although it appears that the use of advertising by means of newspapers, handbills, or store displays is general throughout the country, we will assume that among these many customers will be found some who do not find newspaper advertising practical. There is no proof, however, that other handbills or store displays are not reasonably practical for all."

The Commission ruled specifically only on the Section 2(d) charges of the complaints, the examiner's dismissal of which had been appealed by counsel supporting the complaints. No appeals had been taken from the examiner's action in dismissing other charges alleging price discrimination in violation of Section 2(a). Under this action, the initial decisions of the hearing examiner dismissing the complaints now become the decisions of the Commission.

F.T.C. Cites Perfume Ads

A Federal Trade Commission complaint has been issued against Helen Wilson, trading as Mail Today Co., Detroit, charging misrepresentation of the origin, quality, and value of perfumes and unfair simulation of well-known trade names.

In radio continuities and in advertising circulars, the respondent offered "for only $2.50," according to the complaint, "3 full bottles"—a six to nine months' supply of perfumes of "the same quality of genuine perfumes" advertised in all the "leading fashion magazines" for as much as $35.00 a bottle. The "bargain offer" was made "for a limited time only," because the "manufacturers of these famous perfumes want to acquaint you with their product." Also cited are advertisements stating that "Five million people from Maine to California in the past few months have taken advantage of the greatest perfume offer ever made," and offering a refund of the purchase price to purchasers "not satisfied."

Actually, says the complaint, the perfumes sold by the respondent were not made by manufacturers of famous perfumes but the names and scents were selected by her and the perfumes were made and bottled by a Detroit commercial concern. The complaint says that her perfumes were not the same quality perfumes advertised in leading fashion magazines to sell for $35.00 a bottle; that nowhere near 5,000,000 people have taken advantage of the offer; that the offer was not for a limited time only; and that refunds of the purchase price have not been uniformly made to dissatisfied customers. The refund charge is also made in connection with W. W. Hair Preparation.

The complaint also charges that trade names of perfumes simulate the trade names of perfumes "well and favorably known to, and preferred by, a substantial portion of the purchasing public." It lists the respondent's brand names as Christmas Eve Sensation, Twilight in Paris, Rhodesia, Shalipre, Morocco, Aphrodesia, Shalimar, Sirocco, and Indiscrete. Also challenged is the representation that the perfumes are of French origin. The representation was made by listing as the manufacturer or creator of the perfumes such French names as Bouchet, La Velle, Michele, Francois, La Farge, and Helene.

Artex Ad Claims Banned

Advertising that Artex constitutes an adequate, effective or reliable treatment for neuritis, sciatica, bursitis, gout, lumbago, or any other kind of arthritic or rheumatic condition, must be stopped in accordance with an initial decision by a Federal Trade Commission hearing examiner. The Commission says that the principal active ingredient of Artex is aspirin.

Research by Drug Makers

Over a third of the medical research in the United States has become the responsibility of the pharmaceutical industry, according to Francis Boyer, president of Smith, Kline & French Laboratories.

Speaking to a nationwide audience during the second in the new series of television programs, March of Medicine, sponsored by SKF in cooperation with the American Medical Association, Mr. Boyer said: "We all owe a great debt to the people who carry on medical research, and a large percentage of these researchers are the men and women scientists of the pharmaceutical industry."

Baldness Claims Stopped

Claims that Bash's Formula Eight products prevent or cure baldness are prohibited in an initial decision filed by a Federal Trade Commission examiner. In the order served on Dale A. Cardner trading as Cardner Supply Company, Norwalk, Calif., Cardner may not represent that his products eliminate the cause of falling hair; prevent baldness or partial baldness; or promote growth of hair on bald or partially bald heads. Also forbidden are representations that baldness or partial baldness is caused only by fungus infection or that the manufacturer is an authority on fungus infections of the hair. Also prohibited is use of the word "Doctor" in connection with any preparation not made in accordance with the formula, or under the supervision of member of the medical profession.

Vitamin A in Cosmetic Creams and Lotions

by G. F. Siemers and P. E. Sleezer
HOFFMANN-LA ROCHE INC., NUTLEY 10, N. J.

COURTESY HARRIET HUBBARD AYER

Recent observations of dermatologists show that vitamin A may be a useful cosmetic ingredient as an aid in promoting a smoother, softer skin. That vitamin A is necessary for a normal skin has been known for some time. Frazier and Hu in 1931[1] gave one of the first complete descriptions of the characteristic dermatoses of vitamin A deficiency. In general, the lesions produced by the deficiency are characterized by excessive keratinization, a thickened horny layer, dryness and scaling. Dermatologists term these conditions keratosis and ichthyosis. It followed that since such conditions respond to vitamin A internally, possibly the local application of vitamin A might also prove valuable.

Many people develop dry, scaly ichthyotic skin without any apparent deficiency of vitamin A, indicating either that there may be difficulties which interfere with the transport of vitamin A to the skin or that other mechanisms are involved in stimulating and inhibiting keratin formation. Vitamin A topically applied has definitely been shown by Studer and Frey,[2] and Sabella, Bern and Kahn[3] to have sufficient inhibiting action on keratinization to make it of interest as a potential cosmetic ingredient.

Although vitamin A has for many years been applied externally as pharmaceutical ointments in the form of fish liver oil concentrates, it was not until recently that vitamin A of a suitable quality and potency for cosmetics has been available. This vitamin, as produced by the Hoffmann-La Roche synthesis, is devoid of the fishy, and other objectionable, odors which usually accompany vitamin A concentrates from fish and mammalian sources. In this synthesis a number of intricate chemical steps are used in obtaining vitamin A from citral, a constituent of certain essential oils. Synthetic vitamin A is extensively used in foods, pharmaceuticals and just recently in cosmetics. Chemically and in biological activity, it is indistinguishable from and identical with, that present in foods.

Vitamin A has long been known to be an essential food factor when taken internally.[4-6] Since this time many investigators have been exploring vitamin A in considerable detail trying to establish its mode of action on specific tissues and from this work certain conclusions can be drawn.

It is quite apparent that the action of vitamin A as an essential nutrient factor should be considered as separate and distinct from its action when topically applied. Locally it may have different effects depending on the tissues involved and the concentrations used.[7] The possibilities as a cosmetic ingredient should not be confused with therapeutic uses, either as an ointment or as a systemic preparation taken internally. Thera-

peutically, it may be applied in concentrations from 10,000 to 50,000 U.S.P. units per gram in the form of an ointment to help correct a definite pathological entity. Prolonged daily use, however, of such pharmaceutical concentrations applied either to normal or pathological skin might well produce effects deemed undesirable by the cosmetician.

Many people suffer from an excessively dry and rough skin which does not deviate sufficiently from the so-called normal to warrant a pathological designation. Such dry skin may be further aggravated by exposure to cold temperatures, dry air and detergents to make skin supplements desirable. Vitamin A, because of its influence on skin physiology, has possibilities in cosmetic creams and lotions in concentrations of 1,000-5,000 U.S.P. units per gram (28,350-141,750 units per ounce). Applied in creams and lotions, vitamin A in concentrations of 1,000 to 5,000 U.S.P. units per gram has been found to be an effective aid in correcting dry, flaky skin conditions and thus maintaining a softer texture. This action must not be construed to mean that vitamin A thus applied has any appreciable systemic vitamin effect, since experimentally vitamin A has not been demonstrated conclusively to enter the body through the skin in significant amounts.* It is conceivable, however, that local deficiencies may exist which could be ameliorated by a preparation applied topically. The anti-keratinizing effect of vitamin A may be explained tentatively on its basic chemical properties which have been described by Flesch.[8] He refers to this activity as probably being a pharmacodynamic action rather than a physiological effect. Accordingly, any benefits in cosmetics may be attributed to this local drug action as well as possibly to a local vitamin effect, should such a deficiency exist.

Cosmetic vitamin A preparations require clear, informative labeling in order that the product be considered only for cosmetic and localized vitamin effect by the consumer. In this respect the label statement "Vitamn A added solely as an external cosmetic ingredient" should be sufficient. In view of data now available, claims for vitamin effect should be made with reservations.

Internal Use of Vitamin A in Skin Conditions

Frazier and Hu[1] in China, Loewenthal[9] in Africa, Nicholls[10] in India and Lehman and Rapaport[11] in the United States have separately described the characteristic dermatoses of vitamin A deficiency. The dermatoses begin with dryness, roughening and itching of the skin of the whole body. Eruptive lesions appear at the site of the hair follicles as dry, firm pigmented spots with central, hard keratogenous plugs protruding. The resultant appearance of the skin has led to the use of the term, "toadskin." The condition described usually begins on the front and lateral surfaces of the thighs and the back and lateral aspects of the upper forearms and spreads to contiguous areas. About one-third of the cases acquire a secondary infection resulting in pimples and boils. Comedos or blackheads are common on the face and chest also and may become infected.

The lesions of vitamin A deficiency are not limited to the skin, however, and may involve epidermal tissues of the eye and respiratory passages as well as other areas. Most important for consideration is the statement of Bloch[12] that vitamin A deficient infants were more liable to infections of the skin and respiratory system. It follows without further comment that the epithelial disorders proved to be caused by vitamin A deficiency will respond to adequate amounts of the vitamin administered internally. Many descriptions of this action have been given in the literature.

Obermayer and Frost[13] in general divide cases responding to vitamin therapy into two groups: (1) the true and established vitamin deficiencies and (2) dermatoses in which a true vitamin deficiency is either debatable or undemonstrable, but for which vitamin therapy appears to be of benefit. These authors summarize their experiences in the latter group, stating that "Vitamin A may be beneficial in the treatment of diseases characterized by excessive or abnormal keratinization, either follicular or diffuse even when the underlying inflammatory dermatosis does not in itself appear suitable for this form of therapy." Cases in this category are cited by these authors in which striking results were obtained with vitamin A orally and where other forms of therapy had failed.

Lehman and Rapaport,[11] Loewenthal[9] and Sweet and K'ang[14] also report marked skin improvement with regeneration of normal follicles after the internal administration of vitamin A. The deficiency symptoms of vitamin A leading to acne-like lesions and atrophic mucous membranes probably influenced other clinicians to use vitamin A for conditions appearing similar histopathologically but not related to vitamin A deficiency.

Straumfjord[15] reported striking success with high dosages of vitamin A in 97 per cent of his cases of acne. Others, although not as enthusiastic, have had a modicum of success with this form of treatment, and recently Sulzberger and Witten[16] stated, "It has been our impression that in conjunction with proper topical therapy, vitamin A orally is of benefit in some cases of acne in which comedones and follicular horny plugs dominate the picture." Obermayer and Frost[13] and others[17,18] similarly observed that vitamin A therapy has been of benefit in the handling of some forms of acne vulgaris.

Ozena, a chronic, troublesome atrophic condition of the nose, not too surprisingly was found to respond by Strandbygaard[19] of Denmark to large doses of vitamin A given parenterally. This work has not as yet been substantiated in this country but others no doubt will repeat the experimental procedures on this rather rare condition. The work may assume significance in that apparently disorders involving epithelial structures

(*Continued on page 118*)

* See "Vitamin A Absorption through the Skin," Page 120 of this issue, for review of the literature on this question..

Pitfalls in Product Development*

by Dr. David M. Ashkenaz

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Those of us who have been concerned for some time with the development of new products must often wonder how, with the wide variety of potentially disastrous pitfalls which exist, it is ever possible to sail between Scylla and Charybdis and emerge with a successful new product. Indeed, it was but one of the numerous types of pitfalls which greatly influenced the passage of the Federal Food, Drug and Cosmetic Act in 1938. As most of you know, one company made the fatal error of marketing a new product without sufficient clinical study and found out, too late, after many patients had died, that the vehicle, which they had selected because it was such an excellent solvent for their active ingredient, had lethal properties. Thus, the ill-fated elixir of sulfanilamide served to focus attention upon the need for adequate clinical study before the issuance of new drugs and, like the fatal collision which is so often required to convince authorities that a traffic light is needed at an intersection, it served to hasten passage of legislation which had been sought by food and drug experts for many years without success.

In the following discussion, we shall consider some of the standard types of pitfalls which occur throughout the development of new products and we shall hope that, by the use of illustrative examples (which, because this is the Parenteral Drug Association, will be confined to parenteral products) the methods for avoiding these pitfalls will become clear. However, in all fairness, it

*Abstract of a paper delivered at the Parenteral Drug Association.

must be emphasized that each pitfall may appear in a myriad of disguises which will render it difficult to recognize and only the use of eternal vigilance, mixed with a liberal quantity of good common sense, will assure success. The pitfalls will be presented in the chronological order in which they might be encountered during the development of a new product.

1. Screening of New Projects

A. *Arrangements with proponents.* Some time ago, Dr. Jones told the representative of the Brown Pharmacal Co. that he had a wonderful idea for a new injectable product. He was interviewed by an officer of the company and disclosed his idea. After spending several thousand dollars in laboratory work on the development of a parenteral dosage form, a subsequent conversation with Dr. Jones revealed that he expected to receive one million dollars and a ten per cent royalty on all sales as compensation for his idea. The company estimated that it would take them at least twenty years, at the expected sales rate, to make one million dollars profit on this product and they promptly dropped the project. This illustrates one of the most dangerous early pitfalls, which is the failure to make adequate arrangements with the person who presents an idea for a new drug. There are many instances where companies have spent much time and money in exploration of an idea only to find later that the person who brought it to them expects an extremely unrealistic reward, far beyond the profit possibilities of the idea. Often, the early consideration of remuneration for the idea, painful though it may be, may result in a precipitous dropping of the entire matter, but this is undoubtedly better for all concerned than to have to take the same action later.

B. *Acceptance of disclosures and patent status.* Some time after they had discontinued work on Dr. Jones' idea the Brown Co. found that research which it had been carrying on for several years led to a product completely different from Dr. Jones' idea, but in the same therapeutic field. They issued the product, and Dr. Jones brought suit against them with the contention that he had given them the idea for working in this field. After much expensive litigation, the Brown Co. was able to show that this was not the case. This illustrates the difficult problem of receiving disclosures of unpatented ideas. Such a disclosure must not be permitted without making certain that it will not restrict the company's activities at any future time. A study of this problem has resulted in the conclusion that there are two alternatives: either the disclosure cannot be permitted until a patent has been issued, or a procedure must be established for obtaining a written agreement in advance that the disclosure will not restrict the company in any way with respect to work it is already carrying on in this or related fields. Many large companies in other industries, particularly the mechanical ones, have adopted the first alternative and shun disclosures of unpatented ideas. However, in the drug industry, because of the large number of product ideas which originate with individuals who are unable to obtain patents prior to disclosure, certain statement forms have been developed which, when properly signed by the proponent, make possible the acceptance of disclosures without the hazards discussed above, and some companies have adopted this procedure.

Another case is that of Dr. Smith who disclosed his idea to the Brown Co. after they had profited from the experience with Dr. Jones by adopting the special procedure for accepting disclosures of unpatented ideas. The Brown Co. proceeded to do laboratory work on Dr. Smith's idea and prepared material for clinical investigation. Fortunately, just before the clinical investigation was begun, but after several thousand dollars and several months had been spent on the laboratory work, the Brown Co. thought it ought to look into the possibilities of patenting the new product and arranged for a patent search. They found that this idea would infringe on two existing patents and they, therefore, dropped this project. This illustrates another pitfall where failure to determine the patent status of an idea for a new product at the very outset may lead to the wasteful expenditure of much time and money in developmental work. The first step is to determine whether the new drug or device will infringe any existing patents. A thorough patent search must be made and the results of this will throw some light also upon the patentability of the idea if it is found not to infringe.

C. *Field of activity.* Dr. Dingle a dentist connected with the dental school of a large university, brought an idea for a dental product to the attention of the Green Laboratories who accepted a disclosure and made a patent search which revealed that the product would be patentable. The product was developed patented, and marketed after the expenditure of two years and many thousand dollars in laboratory and clinical work.

After expenditure of a goodly sum for promotion by detailing, journal advertisements, and direct mail, the Green Laboratories found that this product, their first in the dental field, was not readily accepted by the dental profession even though there was not much question about its effectiveness. The dentists appeared to prefer a less effective product in the same field which was marketed by a firm which dealt almost exclusively with dental products and supplied dentists with many of the routine materials which they used. On careful investigation, the Green Company found that their detail representatives did not have the confidence of the dentists, and were unlikely to obtain this since Dr. Dingle was not liked or respected by many of his colleagues. After more unsuccessful promotional attempts the product was dropped and a loss was written off. This illustrates the great care which must be exercised in entering a new field of activity and, particularly, the importance of associating with professional persons of unquestioned reputation.

D. *Market Testing.* The Brown Co. had been

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Left to right: Dr. Martin Lasersohn, chairman, Scientific and Research Award Committee, A.P.M.A.; Dr. Paul Dudley White, recipient of 1953 Scientific Award, A.P.M.A.; Michael Francis Charley, Association president; and Dr. J. O'Neill Closs, executive vice-president, A.P.M.A.

A.P.M.A. Mid-Year Meeting

Drug company managements were urged to adopt a policy of frankness with professional investment men in a talk given before the American Pharmaceutical Manufacturers Association's mid-year meeting by Wesley A. Stanger, Jr., of Riter & Co., New York, and chairman of the board of Strong Cobb & Co.

"The investment man does not expect to hear a bullish story from management all the time," Mr. Stanger declared. "If things are rough—say so. If you don't like the looks of the industry—say so. It is a lot better to tell the facts without gilding the lily than try to make empty explanations later."

Terming the market "a sensitive thing," he pointed out that stock prices "very often reflect conditions good or bad some time before they are apparent to the general public." People always want to know why a stock moves up or down at a particular moment, he said, adding that the reason does not become apparent

until some time after the fact. In support of this, he cited ethical drug stocks, which started down in 1951 despite the fact that both current business and future prospects were good.

While "most drug companies are in excellent financial shape" today, Mr. Stanger said, in years to come they might find it necessary to borrow money on long-term debt to finance expansion projects. "You will find a premium placed on the company that has built up satisfactory relations with investors of the country," he told the pharmaceutical manufacturers. "Frankness about your situation is one of the best ways I know to accomplish this aim."

As its stocks become more widely distributed, a company should set up "a department to do nothing but handle stockholder relations," the speaker continued. To do this job, he suggested "a combination financial and advertising man who has had some sales experience." The pharmaceutical industry, he asserted, has "a real story to tell financially and a real one to get ready for: It should be properly presented."

Small ethical drug companies, whose stock is closely held, "should consider the distribution of their shares to the public or to institutional buyers that can supply new capital quickly," he urged. The impact of inheritance taxes is keenly felt by a small company, he said, and "owners of the small company have all they can afford invested in the stock of their company and are not in a position to invest any more."

While conceding that broader ownership of a business will not solve all problems, Mr. Stanger was of the opinion that "it will materially assist in solving some of the problems" that could cause a business to be sold to a competitor "at his price" should tax officials decide to look into the company's affairs "at the wrong time."

Touching on fluctuations in drug stocks during recent years, Mr. Stanger called attention to the rapid succession of wonder drugs during the postwar period. This, he said, produced a bullish atmosphere in the market which "resulted in the industry and its stocks reaching the 1951 highs. The readjustment through which the industry has been going since 1951 is a logical sequence to a dozen years of rapid and almost uninterrupted expansion.

"In 1952," he went on, "increasing competition, both at home and abroad, and price-cutting concerted to depress operating results—and thus stock prices—generally well below the highs of 1951." As a result, he indicated, drug companies in 1952 showed mixed sales results and, with few exceptions, sharp earnings declines from 1951 levels.

Yet, he stated, "It is inconceivable to me that as important a business as the drug business—dealing with the very fundamental of life—has anywhere near reached its peak. I don't think it has even reached maturity—at any moment whole new fields can be opened up as a result of successful research. The world-wide field for the drug business is in its infancy." Thus, he concluded, "anyone who gets bearish on drug stocks for the long pull, in my opinion, is in error."

A number of chemical company mergers may be expected in the "reasonably near future," Knox Ide of Ide & Haigney, New York, predicted, adding that these imminent mergers will occur "not only in the pharmaceutical field itself, but in the drug and consumer products fields generally."

Two recent mergers—Merck & Co. with Sharp & Dohme and Mathieson Chemical Corporation with E. R. Squibb & Sons—have established a new pattern, he declared. Merck and Mathieson took the step, he pointed out, after coming to the conclusion "that the best interests of their companies would be served by their entry into the packaged, trade-marked, pharmaceutical field, and their recognition that a consumer may mean a physician or a housewife."

This is a departure for pharmaceutical manufacturers, Mr. Ide emphasized, adding that the industry has held aloof from mergers for a number of reasons. Firstly, he said, the pharmaceutical business "has always been a highly personal" one. There has been a rigid line of demarcation, he continued, between "ethical" pharmaceutical companies, or those having no direct dealings with the public, and non-ethical firms. Mergers in the direction of raw material sources have been blocked, he stated, by the long-standing rule against a supplier competing with a customer, and vice versa.

What has happened in recent years, he explained, is that the pharmaceutical industry has come to realize that many of its fears are "to a large degree unfounded." While not publicizing the fact, he went on, many pharmaceutical manufacturers "are aware of the blurring that is slowly but surely obliterating the line between so-called 'ethicals' and 'proprietaries.' " He also noted that other "more cautious" pharmaceutical firms "are moving quietly, but steadily, closer to the consumer."

Mr. Ide scouted the idea that "eventual elimination by slow death" awaits pharmaceutical companies that choose to remain independent of chemical or other pharmacal concerns in the face of the emerging trend toward mergers. "Bigness does not necessarily guarantee success," he indicated. "The very fact of bigness, while solving some problems, in itself creates additional ones." He stressed that the aim of a pharmaceutical company "should be to have the best products, not the most."

Even though direct mergers with other pharmacal companies may prove unattractive, he asserted, "the fact that a pharmaceutical company elects not to merge with a chemical company" does not mean "it should have no interest" in such business linkages. Pointing out that "the term 'ethical' has indeed reentered the public domain and means properly the moral conduct of a business," the speaker suggested that pharmaceutical firms seriously weigh alliances with good proprietary concerns.

The advantages of such a merger to both sides "are at least as obvious as they are in the pharmaceutical-

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COURTESY TUSSY COSMETIQUES

Up to Date on Shampoos

by Harry Hilfer

Much of the development work being done by cosmetic manufacturers has been directed towards shampoos. Basically, the problem represented was not so much how to formulate a good shampoo as it was towards what the ultimate consumer thought was a good shampoo. There are several factors which must be considered and since several of them are functional opposites, a shampoo must be a series of compromises embodying enough of each of the desirable properties to make it acceptable.

The foremost consideration is detergency, since that is the reason for which shampoos are primarily used. This property is one that may be measured with some degree of accuracy, but it is now generally considered undesirable to have a shampoo that removes 100 per cent of adhesive substances from the hair fiber. One hundred per cent detergency would cause the hair to not only feel dry to the towel but to be somewhat difficult to comb and to set. An ideal condition, moreover cannot be easily fixed on a percentage of total detergency basis, but rather on a specific type of foreign substance removal. For example the ideal shampoo would remove all substances but the natural oils. However, at this point in their development there are no shampoos possessed of such great specificity.

The one very obvious difficulty with shampoos prior to the advent of the more modern synthetic detergents has been the difficulty of removing films of calcium soaps from the hair. This type of foreign soil more than any other caused the hair to appear dead and perhaps dirty. Indeed, an acid rinsing after shampooing becomes almost a necessity. The modern dry shampoos are specific enough in their activity to have overcome this defect, and therefore to contribute greatly to the desirable features of a shampoo. There are two methods which may be used and both have strong adherents. Calcium soaps are formed by the reaction between soluble calcium bicarbonate and a soap. This reaction is possible only when the matter used contains relatively large amounts of calcium salts and when the pH is alkaline. The problem is not as prevalent in soft water areas as in hard water areas and when the water contains no calcium or is of zero hardness soaps do as good a cleansing job as do the synthetic detergents. However, the geographical soft water areas are few as compared to hard water areas. The elimination of soap fron a shampoo would be one method of counteracting this reaction in hard water—a method generally followed—or if soap is considered desirable, to have enough of other types of detergents present to keep the calcium soaps suspended and therefore minimize thick deposition on the hair. A third method employs a sequestrant which effectively removes the calcium salts from the reaction so that no calcium soaps could be precipitated.

The various forms of the shampoo takes are all capable of incorporating these different factors. However, the cream shampoo is perhaps the best example of a soap-detergent combination. This method was used because of the relatively small amount of a soap such as sodium stearate needed to stiffen a detergent system as compared to substances such as glyceryl monostearate or other hydrophilic waxes. Obviously the incorporation of too large a concentration of these waxes would lower the detergent effectiveness of the system since in the shampooing operation the active detergent would have to include these materials as well as the soil. The soaps however would not interfere to the same extent. Obviously, if calcium soaps were formed it would have to be treated as another soil. A better material for the same purpose is perhaps some of the dialkanolamine condensates. Many of these substances jell on the addition of water and are therefore capable of forming a cream of the desired concentration in this manner. They do not possess as good a property as soap insofar as retention of thixotrophy under conditions of higher temperatures, and they are therefore used in conjunction with soaps, in systems where the soap concentration could be lowered appreciably. The dialkanolamine condensates are good detergents and have the added advantage of not being affected by calcium salts.

In the newer liquid cream shampoos, soaps need not be used at all. In many of these preparations, the detergent is used with a minimum amount of an opacifier with perhaps a small addition of an alkanolamine condensate or other detergent as a thickening agent and viscosity control.

There are a large number of different types of detergents available for use in shampoos which are not affected by calcium salts. The best known is perhaps the salts of sulfated lauryl alcohol and perhaps this is the single type now in greatest use. The sodium is used in both the liquid cream and cream shampoo while the more soluble ammonium and triethanolamine salt are used in the clear liquid solution type. It has good stability at neutral and slightly alkaline pH's but is hydolyzed at an acid pH. The hydrolysis proceeds at a geometrical rate since the pH is lowered increasingly with hydrolysis causing the reaction to proceed at a faster rate. The use of sodium lauryl sulfate is therefore best at a neutral or slightly alkaline pH perhaps a pH of 8. It could however be used at lower pH's but with the addition of a buffering agent. Its use is characterized by copious lathering, a welcome characteristic for shampoos, since in the lay mind detergency is measured to a great extent by lathering properties, though this is not true in fact.

Its use in conjunction with the alkanolamine condensates is capable of forming a system with the desirable viscosity and pH properties sought for. The sulfated lauryl alcohols are also compatible with soaps which is not necessarily true of others.

One group of shampoos utilizes the salts of glyceryl monolaurate, monosulfate and has attained great popularity. Its use has been limited because of the patent situation, yet its importance should not be underestimated. This group of compounds is more readily hydrolyzed than is the sulfated lauryl alcohol since it composes at both alkaline and acid pH's. The

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Bursitis

by Milton A. Lesser

Bursitis is becoming an increasingly common condition. This disorder has been recognized as the cause of a growing amount of disability, and more and more attention is being devoted to its diagnosis and treatment. As a result of this heightened interest, a number of new drugs and methods of therapy are being tried and adopted for use in the treatment of bursitis.

Although other parts are often involved, bursitis affecting the shoulder, scientifically known as subdeltoid bursitis or subacromial bursitis, is the most frequent condition of this nature and the one most often discussed in the medical literature. The inflammatory process responsible for subdeltoid or subacromial bursitis is a major cause of stiff and painful shoulders; occurring in from 65 to 75 per cent of all cases of shoulder pathology, according to Hallstrand.[1] Pelner,[2] citing an even higher figure, states that subdeltoid bursitis, as the commonest disease of the shoulder joint, is reputed to cause at least 80 per cent of painful shoulders. Statistics indicate that the condition is more common in women than in men. The incidence of this disease is highest among those past the age of 40.[3] In the opinion of King and Mahoffey,[4] the fact that the disorder is primarily confined to the latter part of life lends support to the view that it is essentially part of the aging process. Hence, say these authorities, 100 per cent complete and immediate cures should not be expected. To complicate matters, it is recognized[5] that the painful shoulder is one of the most common, and sometimes one of the most difficult, ailments to confront the orthopedist. As remarked by Encuna,[6] it is also recognized that careless treatment or neglect of a bursitis can lead to a chronic disability that may take years to overcome.

Over the years, a number of terms have been used in connection with the condition now generally referred to as bursitis. In addition to subdeltoid bursitis and subacromial bursitis, such terms include calcifying tendinitis, peritendinitis calcarea, supraspinatous syndrome, para-arthritis, and others.[4]

By definition, bursitis is an acute or chronic inflammation of a bursa.[7] Bursae, it has been pointed out,[8] form the body's lubricating system; all parts of the body in which movement is likely to produce friction being provided with these liquid secreting sacs. As explained by Ancona,[6] a bursa is an enclosed sac partly filled with fluid that cushions one bodily structure, usually bone, from another. There are many such bursae in the body; 33 being found in each upper extremity and 37 in each lower extremity. Stone[9] cites the fact that in many parts of the body exposed to pressure the bursae make an all-out attempt to diminish friction and permit a gliding movement. In regions where exceptional pressure is brought to bear on prominent structures, adventitious bursae will be formed. Thus, bursae are formed whenever a need for them arises in response to chronic irritation of a sliding or rubbing motion.[10]

It is obvious that bursitis is not limited to the shoulder but may appear in other parts of the body as well.[9-11] Other specific and fairly common forms of bursitis include the olecranon (miner's elbow, student's elbow), ischial (tailor's bottom, weaver's bottom), prepatellar (housemaids' knee), and retrocalcaneal (Achilles).[7-12] Even a bunion, which is a type of advantitious bursa, may become infected or traumatized.[6]

In bursitis, the bursal sac is distended with inflammatory exudate.[12] This may be caused by single or repeated trauma or by acute or chronic infection. Thus, in cases of subdeltoid bursitis, some patients may complain of painful shoulder after a cold or an infection elsewhere in the system. It may be a complication of circulatory or nervous diseases, or it may result from some dysfunction of the shoulder joint itself.[6]

The traumatic element in this condition, generally considered the main cause of subdeltoid bursitis, may result from a direct blow to the shoulder or from falls on the outstretched hand or shoulder itself.[1] Repeated muscular actions involving the shoulder may enter the causal picture. Hence the disease is frequently seen in such occupations as painting, scraping, digging, elevator operating, orchestra conducting, violin playing, and baseball pitching. Automobile drivers who rest their arms on the window ledge, exposing the shoulder to constant drafts, are prone to develop this condition. Sudden strain during lifting may also be the etiologic factor.[6,14,15]

The affected bursa may contain calcium deposits within its lumen. According to King and Mahaffey,[4] calcium salts are seen in the majority of cases and probably are the result of disturbed local metabolism in the area of damaged tissue. It is their opinion that the presence of calcium denotes more chronic changes, while edema, congestion and swelling represent a more acute condition. However, as noted by Hallstrand,[1] the simple presence of a calcareous deposit does not itself cause symptoms. They are due either to the inflammatory reaction about the deposit or to some mechanical interference with shoulder motion. Noteworthy, too, are the observations of Krabbenbaft and Leucutia.[16] They emphasize that the size of the calcium deposit bears little relationship to the severity of symptoms, to the response to treatment, or to the likelihood of recurrence.

Clinically, say these workers,[16] the disease is usually classified in acute, subacute, and chronic forms, depending on the severity and duration of symptoms. Thus, symptoms of less than a week's duration are considered to represent an acute bursitis; symptoms of one week to two months' duration are classed as subacute bursitis, while symptoms lasting longer than two months are considered to be chronic bursitis.

Patients with acute subdeltoid bursitis complain of pain that may be excruciating and totally disabling. Because of muscle spasm, motion of the shoulder joint is markedly limited, particularly in attempts to internally rotate or abduct the arm. Point tenderness may be elicited over the greater tuberosity, this being frequently associated with local evidence of inflammation, such as heat and swelling. Local tenderness may be so great as to make intolerable even the mere pressure of clothing.

Diagnosis is more difficult in the subacute and chronic forms. The patient may give a history of intermittent pain over a period of months, perhaps years. Restriction of motion may be more definite than in the acute form and passive motion is usually more limited.[10] Hence, depending on a number of factors, chronic bursitis may show various degrees of pain, swelling, effusion, tenderness, muscle weakness, and limitation of motion.[7]

Such symptoms, as well as X-ray evidence of calcium deposits in the involved areas, help to confirm the diagnosis of bursitis and point to proper treatment. These signs also help to differentiate bursitis from a number of other disorders, including fractures, bone disease, neuritis, arthritis, cellulitis, and periarticular tears of tendons or muscles. As noted by Osmond[17] in discussing lesions that produce bursitis-like symptoms, cardiac, gallbladder and pleural disease may also produce shoulder pain.

In cases of chronic bursitis, the cause of the chronicity should be determined and eliminated if possible. To this end the patient's occupation and sports activities must be given due consideration. In addition, such conditions as gout, syphilis, tuberculosis, and foci of infection must be eliminated as etiologic factors.[7]

Following the diagnosis, treatment is based largely on whether the bursitis is acute or chronic. It has been said[18] that acute and chronic subacromial bursitis are two entirely different problems from the standpoint of therapy. For one thing, chronic bursitis is often resistant to therapy,[7] whereas acute, uncomplicated cases often show a tendency to spontaneous recovery.[4] It should be noted in this connection that most discussions of treatment are primarily concerned with bursitis associated with the shoulder. However, so pointed out in one indicative report[12] bursitis in other locations presents similar problems; the anatomical localizations accounting for the differences in the clinical picture and in therapeutic considerations.

The patient with typical acute subacromial or subdeltoid bursitis has severe pain that prevents the use of the extremity and disturbs rest. Understandably, the immediate relief of pain is the primary object of treatment.[1] For this reason, most plans of treatment call for rest of the affected extremity, protection of the part against exposure to radical temperature change, and the administration of drugs to control pain.

Analgesics, such as salicylates or codeine, and sometimes even narcotics, are temporarily required for control of the acute pain. Sedation may be necessary because, in addition to considerable pain, many patients suffer much loss of sleep. In the condition which he describes as acute calcifying bursitis, Leibhalz[19] has obtained good results by giving large doses of salicylates.

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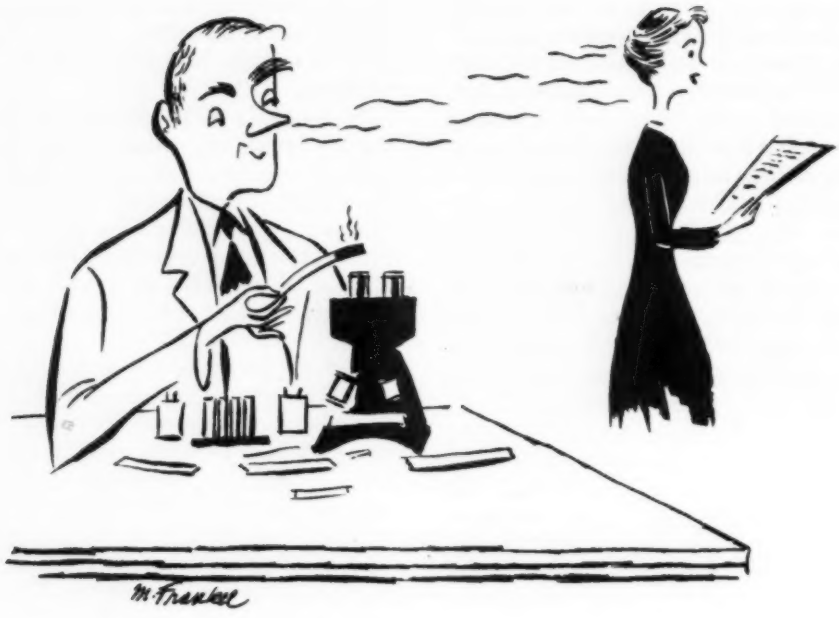

Special Problems In Odor Perception

By Dr. Max Stoll

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The mechanism of odor perception is one of those unsolved problems which puzzle men of science. Contrary to the other senses, for instance, sight and hearing, for which we know the type of stimuli, as well as the way they are perceived by the organ, smell has so far kept most of its secrets.

In spite of this, theories trying to explain its mechanism are numerous, nowadays more than ever. They are most varied and based on all kinds of experiments. Every worker in the field of perfumes has a theory of his own according to his personal taste and inclination. We thus find theories which are mainly concerned with the classification of odors[1] and whose authors nourish the secret hope of reaching a clear denomination of odors. Others try to describe the nature of the stimuli of smell in the light of electronic theory.[2] Others again, who have an inclination for mathematics, establish a system of equations based on the calculus of probabilities,[3] and so on.

The great variety of theories shows the complexity of the problem. Its solution certainly requires the collaboration of the chemist, the physicist, the biologist, the anatomist, the neurologist and the psychologist, to quote only the most important ones.

Representatives of all these branches of science have already brought forward a great number of observations, ideas and theories.[4] Although none of the latter appears quite satisfactory most of them seem to contribute interesting points to the solution of the problem.

*Summary of lecture delivered by Dr. Max Stoll during his Spring, 1953, tour of the United States.

I venture to advance here some ideas of my own. My work has led me to study certain new odoriferous substances liable to partial anosmia, and I am of the opinion that by studying the way an odor disappears, fruitful information can also be gathered about the way it is formed.

The problem of partial anosmia has recently been dealt with in detail by Guillot.[5] Working with our Exaltolide, (a megacyclic product with a musky fragrance) this author noticed that certain people with a good nose were totally unable to smell it.

By noting what perfumes could not be smelled by a number of people with well-trained noses, Guillot drew up a list of products liable to partial anosmia, as follows:

	Molecular weight
1. Exaltolide and all other megacyclic musks	234-252
2. Nitromusk or benzenic musk	266
3. Steroid musks of Ruzicka	283
4. Cyanhydric acid (bitter almond smell)	—
5. Ambergris (special amber scent)	248
6. Benzyl salicylate	228
7. Methyl-ionone (violet flower scent)	204
8. Farnesol (scent of limetree in blossom)	224
9. Sclareol (wood scent)	260

Guillot believes that for each class of anosmia there is a basic class of odors. He hopes to discover all basic odors by studying anosmias. These basic odors, like the basic colors in the field of colors, would be fundamental values, by the mixing of which all perfumes might be obtained. He foresees that the number of basic odors may reach into the tens or even hundreds, since for musks alone there exist three basic classes.

Guillot's attention was more particularly attracted by the fact that the same people who could not smell the megacyclic musks could perceive other musks without difficulty, and vice-versa. He drew the conclusion that there must exist specific receptive centers for each class of odoriferous substances liable to anosmia. He even went further and suggested that the shape of the sensitive organ is specific and can only react to a certain type of molecule. It may, of course, happen that a molecule which can easily get out of shape can adapt itself to various receptors. In that case, a single substance produces various perfumes.

The whole theory is very fascinating and seems to have contributed a fruitful idea to the problem of the perception of odors. The phenomenon of partial anosmia can no longer be denied, but the explanation given by Guillot does not seem to me the only possible one.

When looking at the list of substances with anosmia—which I can indeed confirm with the exception of cyanhydric acid, which is too toxic for experiments of this kind—one sees that they all possess a molecular weight which places them at the limit of odoriferous substances. One knows, in fact, that substances with a molecular weight over 250-270 generally no longer smell and that 300[6] is the absolute limit. It is, therefore, quite possible that for certain people, and not for others, and for certain substances, this limit is displaced towards lower values and that we are, therefore, faced not with the problem of genuine anosmias, but with that of the disappearance of odor when the weight of the molecule increases.

It is a well-known fact that the odor of aliphatic hydrocarbons begins by increasing when the molecule becomes heavier, that it reaches a maximum and then disappears completely when the molecule contains more than 12 or 13 carbon atoms. Thus, cyclotetradecane is completely odorless for everybody, whereas some people still perceive cyclotredecane. But this does not happen because the molecules do not reach the nose in sufficient quantity since the same molecule with an additional CO or C group possesses a strong smell in spite of the lower vapor tension of ketones as compared with hydrocarbons.[7]

The same phenomenon appears still more clearly in the series of amber-scented epoxides.

If one compares the odors of noramberoxide,[7] amberoxide,[8] sclareoloxide and sclareoldioxide,[9] one would expect to find the same amberlike odor in all four products. In all of them the carbocyclic rings are exactly the same, only the heterocyclic ring changes by the addition of one or two CH_2 groups, so that the molecules have respectively 16, 17 and 18 carbon atoms. Sclareoldioxide has one oxygen atom more than sclareoloxide as osmophor group. Hence, the molecular weight increases from one compound to the other and one would expect the odor to diminish in the same way. Surprisingly enough, sclareoloxide is without odor for everybody, whereas sclareoldioxide has no odor for some well-trained noses while for others it has a strong smell, even stronger, for some people, than that of noramberoxide in spite of the smaller vapor tension. It is somewhat different, but still woody, amberlike.

This points to an important factor which contributes to the cessation of the odor perception, namely the kind and number of osmophor groups. The influence of this factor is most striking in the case of heavy molecules. Thus oxaltol and civettol are without odor, even for the keenest nose, whereas the corresponding ketones exaltone and civettone have a very strong smell. Should an extra osmophor group be added to the ketones, the odor is enhanced, if that group is an epoxide, and it ceases, if it is a second carbonyle.

The same phenomenon is observed in the series of the so-called steroid musks. In spite of its high molecular weight (283), androstenone possesses a strong smell of urine. The corresponding alcohol, androstenol, possesses a very similar smell but without the roughness of the former. In view of this softening down of the

(*Continued on page 138*)

Selective Media In Study Of Oral Flora

by G. F. Reddish

LAMBERT PHARMACAL CO.
DIVISION OF THE LAMBERT CO., ST. LOUIS, MO.

Because of the variety of microorganisms in the oral cavity, it is necessary to use several selective media in order to determine the frequency and numbers of the different kinds present. Suitable dilutions of saliva and mouth rinses plated on the following media make possible quantitative counts of the microorganisms listed:

Snyder's Medium for aciduric organisms (qualitative)
Tomato juice agar for aciduric organisms (quantitative)
Rogosa agar for lactobacilli
Mitis salivarius agar for streptococci
Staphylococcus medium No. 110
Malt extract agar for yeasts
Nutrient agar for "total" counts

A proper approach to this problem involves consideration of the following:

I. Sampling procedures.
II. Culture Media used.
III. Interpretation of results.

The information obtained is useful for the following purpose:

1. Studies on the etiology of dental caries and oral infections.
2. Correlation of results with susceptibility to dental caries and oral infections.
3. Determination of the effects of prophylactic and therapeutic measures in the oral cavity.

I. Sampling Procedures

The following sampling procedures have been employed for determining the kinds and relative numbers of bacteria in the oral cavity:

1. Swab technique.
2. Normal (unstimulated) saliva.
3. Stimulated saliva.
4. Rinse method.

Because these different methods of sampling have been used, the results obtained have been not only inconsistent but actually conflicting. For this reason it is desirable to discuss the merits and limitations of each method.

1. Swab Method

Because of the inherent inaccuracies in the swab method as usually employed for securing bacterial samples from the oral cavity, this procedure is rarely used in studies on the value of prophylactic or therapeutic measures used in the oral cavity. This method has largely been superceded by other procedures.

2. Normal (Unstimulated) Saliva

The use of unstimulated saliva for the purpose of determining the kinds and relative numbers of oral bacteria has been widely employed for the purpose. Samples of saliva may be plated, in proper dilution, on

*Delivered before Scientific Section, Proprietary Association, Dec. 11, 1953.

selective media for determining the numbers of certain kinds of mouth organisms, also in plain nutrient agar for so-called "total counts" in which the different species are not separated. Since the microorganisms present on mouth and throat surfaces are constantly present in saliva it is generally agreed that the kinds and numbers of bacteria present in saliva are representative of those present on oral surfaces. For these reasons, the use of normal (unstimulated) saliva for studying the oral flora is justified, although not ideal, for the purpose.

3. Stimulated Saliva

The use of stimulated saliva, strangely enough, has often been employed for the same purpose, although there are several reasons why this should not be done. In the first place, stimulated saliva is not normal saliva and does not represent a normal condition in the oral cavity. The process of stimulating the flow of saliva actually dilutes the saliva already present in the mouth. Saliva as it is secreted from the salivary glands is sterile. Therefore, as stimulated saliva enters the mouth the number of bacteria already present in the fresh saliva are reduced according to the length of time stimulation has continued. This introduced a serious variable which quite naturally gives results which cannot be duplicated. Also repeated stimulation of the flow of sterile saliva, as accomplished by chewing paraffin, causes a consequent reduction of the number of mouth bacteria in the mixed saliva.

Because of this continued reduction in the number of mouth bacteria per unit volume of stimulated saliva, tests by this method designed to measure the effect of the use of antimicrobic agents in the oral cavity result in bacterial counts that are distorted and misleading. For example, bacterial counts are made of saliva stimulated by chewing paraffin for three minutes, followed by tooth brushing with a dentifrice, and then further bacterial counts are made of saliva stimulated three minutes after brushing. The reduced number of bacteria following brushing, when determined by this method, will be due to a variable degree to the dilution with fresh, sterile saliva. The extent to which such reductions in bacterial counts are attributable to the action of the dentifrice, as distinguished from the effect of dilution with sterile saliva, is not revealed by this method. Results of such tests have been reported which are obviously, for the reasons given, unreliable.

4. Rinse Method

A far more satisfactory and accurate sampling procedure is the rinse method. This involves rinsing the oral surfaces with a definite amount of sterile saline solution for a specified time and plating the rinses in suitable culture media. The kinds and number of bacteria removed in this way from mouth and throat surfaces can be accurately determined. When the test procedure is conducted in a uniform manner consistent results are obtained.

The rinse test should be conducted as follows:

Two hours after breakfast rinse the mouth (in caries studies) or gargle (in cold prevention studied) with 20 ml. of sterile saline for 30 seconds. Then expectorate this rinse into a sterile test tube and immediately plate on appropriate media. After two hours, to allow for re-establishment of the oral flora, perform the oral hygiene measure (tooth brushing or gargle). At 15 and 30 minutes and one and two hours afterwards, rinse the mouth (or throat) with 20 ml. of sterile saline for 30 seconds, plate the rinses immediately on appropriate media, incubate the plates at 37° C. for 24 to 48 hours according to the medium, and then count the colonies. Compare the kinds and number of bacteria in the control pre-test rinses with those of the post-test rinses and calculate the per cent changes.

While this is not a standard test, the procedure has been widely used in research on the oral flora in at least four of the largest universities and in many independent research and other laboratories. With reference to the use of oral antiseptics, Ostrolenk *et al.* (1952a) stated that the mouth rinse technique ". . . offers useful information on the degree of antibacterial activity" of such antiseptics under practical conditions of use. Also Appleton (1944), in discussing the merits of the rinse method of sampling the oral flora concluded, "But we can obtain estimates of the number of bacteria removable in mouth-rinsings after carrying out these measures, and it is probably legitimate to assume that the number of bacteria left in the mouth is a function of the number removable in mouth rinses."

It may, therefore, be concluded that the mouth rinse sampling procedure is more suitable and more accurate than are other sampling methods, and that the results obtained are more significant.

In this connection a paper entitled "Number of Bacteria Removed from the Mouth as Measured by a Rinse Method" by Ostrolenk, Meyers and Mollars (1952b) of the Food and Drug Administration and the U. S. Naval Dental School stated: "For this work a rinse technique, utilizing physiological saline (0.85 per cent), seemed to be the simplest and easiest to control. The saline solution could be easily sterilized, the volume could be fixed with precision, its time of application could be governed; with "swishing" of the material, all portions of the oral cavity would be reached, most all individuals were equally skilled in its use, and even the most indolent subject could be persuaded to swish vigorously for thirty seconds."

II. Culture Media

The next important consideration is the kinds of culture media to be used in studies of the oral flora. For the present purpose only those which are useful in studying the effect of dentifrices will be considered. In this connection interest is centered on the bacteria involved in dental caries and only those media will be considered which are useful for that purpose.

(Continued on page 142)

COURTESY HELENA RUBINSTEIN.

Cholesterol

by Edgar S. Lower

TECHNICAL ADVISER,
CRODA INCORPORATED

part two:

(*a*) Cholesterol Emulsions.

(*b*) Cholesterol and the Skin.

Cholesterol is an emulsifying agent of the water-in-oil emulsion-producing type, this being probably the most important use for the product apart from those based on its pharmacological properties and those of its derivatives.

Unsaturated sterols, of which cholesterol is an example, seem to possess better emulsifying properties than saturated ones, e.g. cholestanol, and they also emulsify better if used in conjunction with other high-molecular-weight alcohols, fats and waxes—conditions which usually exist in most cosmetics, for example.

This capacity of cholesterol as an emulsifying agent of the water-in-oil type is well illustrated in the following table, as a function of concentration in liquid paraffin.[123] With increasing water content, cholesterol-stabilized water-in-oil emulsions become stiffer, whiter and more opaque.

Emulsifying power mls/100 grams base	Cholesterol in Oil Per Cent
60 app.	0
300 "	5
460 "	10
700 "	20
755 "	25
725 "	30
650 "	40
565 "	50
125 "	100

Cholesterol is reported to raise the water absorption value of petroleum jelly from almost nil to over 100 mls. per 100 grams for one per cent cholesterol, 230 for 3.5 per cent and to nearly 400 for five per cent.[122]

The pure esters alone, many of which form anisotropic fluids on warming, are not useful emulsifying agents until they are blended with small proportions of free cholesterol, as it has been shown that esterification of the alcohol group in cholesterol depresses the emulsifying properties of the product to a very great extent.

It is especially useful in this capacity in conjunction with its esters, and this unexpected and useful feature is carried through to its naturally occurring esters in e.g. lanolin, and the cholesterol in wool wax alcohols.

As an illustration, lanolin to which, say, three to five per cent of cholesterol has been added, will absorb five to ten times the amount of water it would normally take up.

In the next table is shown the influence of cholesteryl esters generally, on the power of cholesterol as an emulsifying agent.

The test method utilized a mixture of 2.5 per cent cholesterol and 2.5 per cent ester in liquid paraffin.

The intensifying action of its esters on cholesterol is attributed to the additional rigidity of the interfacial film which results, partly from association owing to hydrogen bonding, and partly from adhesion between hydrocarbon chains, the effect of which increases ex-

ponentially with the length of the acid chain in the ester.[122]

Emulsifying power mls/100 grams base	Carbon atoms in acid radical of ester
625	4
830	8
1030	12
1180	16

Its emulsifying power is also improved if it is used in conjunction with dicholesteryl ether or lecithin. Typical cosmetic formulations utilizing the ether contain about one per cent.

Since cholesterol is a non-ionic emulsifier, its emulsions are stable to most acids (e.g. lemon and pineapple juice etc.) and salts.

A determination of the surface activity of cholesterol by measurement of interfacial tension has been recorded, from which the following results may be quoted.[188] Comparisons are included with related materials.

Sample	Solution	Interfacial tension in dynes/cm. Age of interface 120 seconds.
Cholesterol	One per cent w/v in white oil	5.6
Wool Wax Alcohols	One per cent w/v in white oil	5.0
Lanosterol/agnosterol fraction	One per cent w/v in white oil	16.4
Cetyl Alcohol	One per cent w/v in white oil	13.8
Blank	Water/White oil	52.5

White Oil Viscosity = 74" Redwood No. 1.

Oil-in-Water Emulsions

A great deal of attention has been directed to the manufacture of emulsions of practical value which are stabilized with combinations of two emulsifying agents, one oil-soluble and the other water-soluble, or substantially so, e.g. cholesterol and cetyl sulfate.[15]

An important feature of the alkyl sulfates in this connection is the property which they have of interacting in films of high molecular weight fatty alcohols such as cholesterol, to give a complex body having excellent emulsifying properties combining the oil soluble properties of the higher alcohols, together with the excellent hydrophilic properties of the alkyl sulfates.

A typical example of the utilization of this combination is one in which two to five per cent of the higher alcohol is added to the oil phase of an intended emulsion formula and sufficient alkyl sulfate, calculated to give 0.05 to 0.1 per cent (on the finally diluted emulsion) added to the aqueous phase. Both groups of components are warmed slightly and the oil phase run into the aqueous phase, with continuous stirring, the remainder of the water being added gradually keeping the oil/water ratio high at all times to give maximum dispersion.

Again, if a cold aqueous solution of sodium cetyl sulfate is poured into a cold solution of cholesterol in mineral oil, extensive emulsification will occur without agitation due to the formation of these molecular complexes, although shaking the emulsion by hand will assist. As temperature increases emulsification is less spontaneous until it is only slight at 80/90° C.

The following composition gives excellent liquid oil-in-water emulsions.[113]

A.	Cholesterol	= 0.140 grams
	mineral Oil	= 10.000 grams
B.	Sodium Cetyl sulfate	= 0.075 grams
	Water	= 40.00 grams

Interfacial tension measurements have been made with cholesterol in an oil phase and potassium laurate and sodium lauryl sulfate in the water phase.[210]

These molecular complexes of cholesterol and sodium cetyl sulfate present at oil/water interfaces, lower interfacial tension to negligible values and at the same time stabilize oil droplets.

Addition of certain quantities of salts, e.g. sodium chloride, to such emulsions enhances emulsification and less cetyl sulfate is needed, the salt concentrating the emulsifier around the droplets.[136]

Such emulsions have been found to possess very good properties as ointment bases and further illustrations of this type of emulsion formulation are set out in the table following:

Component per cent by weight	(1)	(2)	(3)	(4)
Wool Wax Alcohols	5.0	5.0	—	10.0
Cholesterol	—	—	5.0	—
Ceresin Wax	2.6	—	—	2.5
Paraffin Wax B.P.	5.0	5.0	5.0	5.0
Paraffin Liquid B.P.	25.0	25.0	25.0	25.0
Oleyl Sodium Sulfate	0.75	0.75	0.75	1.0
Water	60.0	60.0	60.0	80.0

Similar compounds prepared without the alcohols would be found useless.

Cholesterol may be used in low concentrations to effectively stabilize emulsions such as are produced by most oils in soapy water, and quantities of the order of one-half to two per cent are effective.

Similar complexes to those described above are formed if gelatin is used in place of the cetyl sulfate and quaternary ammonium compounds can also be employed.

The degree of interaction between the polar groups of the film substances and penetrating compound, e.g. cholesterol and cetyl sulfate respectively, is of importance. When cholesterol acetate or stearate is used instead of the sterol, stable emulsions are not produced. The re-activity of polar groups towards the alcoholic group of cholesterol is recorded as follows:

$$NH_3^+ > SO_4^- > SO_3^- > COO^- > NMe_3^- > \text{Bile acid anions}$$

Some interesting experiments have been carried out with the two antagonistic emulsifiers, cholesterol and lecithin, at an olive oil/water interface, and these have shown the lowering of interfacial tension to be additive

(*Continued on page 127*)

Horse Sense

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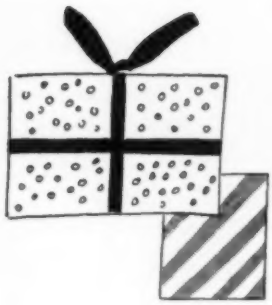


Packaging and Selling

Time for Restraint

The advance in research in many fields is putting a very heavy burden of responsibility on the American Medical Association, on individual doctors and to a lesser extent on certain Government bureaus. This heavy responsibility lies in the increasingly evident fact that a number of important industries are undergoing critical appraisal in the light of new scientific developments. We have already seen some instances as to how a hasty judgment by a professional group or the irresponsible talk by an individual under the mantle of his profession may drastically injure an industry.

If any profession in America should use extreme caution in taking a stand which will drastically affect a business or an industry, it should be the medical profession. This is true because any objective doctor will admit that it is on the record that they themselves as a profession, in striving toward the conquest of human ailments, have been committed to beliefs which time and again they have been compelled to completely reverse.

One industry which is now subject to critical examination is agricultural chemicals. This has been one of the fastest-growing industries in America during the last decade and the research and the products of this industry have contributed enormously to the wealth of America. Nevertheless, the facts are becoming clear that some of these chemicals are having secondary results injurious to health or to the soil or to the biological balance of insects that may make them either dangerous in their use or of final negative value.

The case of DDT is perhaps the prime example. Certainly, the very serious claims of injury to human health, cannot be ignored and must be explored fully and thoroughly. At the same time any research which claims to make DDT a dangerous product, which should be eliminated or severely restricted, should be completely objective and should be extensive and thorough enough to eliminate all doubt as to the accuracy of the criticism. This applies to the entire development of chemical research in agriculture which holds so much promise for this country.

The field of nutrition is another place where very many huge commercial enterprises are involved and where in many places serious disturbances to our economy can take place. There have been great advances in nutrition in the last generation. Nevertheless, there are vast areas here where the nutrition experts are treading on infirm ground. In addition it seems as if many groups and organizations have seized upon nutrition as a popular public appeal and are aiding in what seems to be a rather frenzied situation for a considerable part of the food industry.

The two things that seem to be universally uppermost in the minds of this country are Communism and Calories. The fear of calories has become so widespread that publishers generally accept it as a Number One theme of reader interest and increasingly advertisers of liquor, dairy products, soft drinks as well as the food industry are scrambling into large advertising campaigns for self-defense.

We wouldn't dare to say that the huge torrent of propaganda on overweight is a nonsensical fad. All we will say is that a recent medical report, which we read somewhere, stated that an examination of several thousand heart attacks indicated that weight had no initial effect in this heart attack.

Since we are developing so many variations in diet, we have multiplied the dangers from the hasty scientist who craves headlines or from the casual scientist who has little conception of the damage he can do. We certainly should be triply and objectively sure before we start in motion a movement which might seriously reduce as one instance the sugar consumption by the American people. We had better be sure about such things as salt, or in our dairy industry cholesterol, or many other things which may have far-reaching effects on the production of food and the food industry.

The tobacco industry which includes a very important part of our agricultural wealth is now very much in the limelight. The American Medical Association Journal has recently dropped all cigarette advertising, which is their privilege. This action, however, has given rise to a tremendous account of publicity and has created the opinion that the American Medical Association and doctors in general are finally convinced that cigarette smoking is the cause of lung cancer.

This may be true, but it seems to us that there has

been much too insufficient statistical research on this subject and much too little scientific research as to other factors which could cause the rapid rise of this serious ailment. Since the extent of this illness is so much heavier in the city than in the country, it must certainly be evident that there has been too little examination in the effects of the combustion products from automobiles and trucks or the waste chemicals from industry, home and office heating.

Like any other group of human beings, the American doctor is very subject to fads and rides his hobby horse as hard as anyone else in this country. Part of the reason for this may be the enthusiasm and the pressure of his patients. Nevertheless, anyone can look back and recall many series of treatments, as for instance, the rice diet, which had its day and largely disappeared without regret.

This era of creative research must impose a serious problem of caution and responsibility upon our scientists and our professional men. As the prestige of research and the wonderful fruit its results increases, the scientist and the professional man in this country grows in stature, as he should. This is all the more reason why these men must approach with fear and caution a decisive opinion which could have serious social and economic effects.

Left Handed Advertising

Maybe some day this will be called the era of research. At any rate, there is plenty of evidence that the people of America have fallen in love with research, are eager to accept anything new that is developed by research and contrary to most of the rest of the world would rather have something new than something old.

Of all the industries or businesses engaged in research, it looks as if the advertising business should, like the famous Arab, lead all the rest.

In the advertising magazines of the last few years, there have been numerous articles showing how advertising agencies have been increasingly making use of the social sciences, that is Psychology, Psychiatry, Anthropology and others.

This wouldn't be enough to make the advertising people Star performers in research. The things that bring them this distinction are other paths of exploration.

For instance, Ruthrauff & Ryan is making use of hypnosis to determine consumer buying motivations. According to this agency, "We go deep into the subconscious mind, normally a stumbling block in our research. Hypnosis sharpens up the power of recall and without inhibitions, we get accurate and honest answers. We get at those facts that are basic in all human beings."

Not to be outdone on this, the Institute of Visual Research in Chicago is using the photo electric-eye camera to determine how people read newspapers. Some startling results have been developed here. Seventy-eight per cent of the readers tested in this way looked first to the left-hand side. If these results continue to show up, a great many advertisers who have for years been an unholy pest in their relations with publishers in demanding right hand pages may find that they have been exerting their energies to decrease the value of their advertising.

Reducing Nicotine

If nicotine is the villain under suspicion by the American Medical Association, rather than some of the tar acids, there is strong hope for the tobacco industry. According to Columbia University's Botany Department, two minerals in the soil have a great influence on the amount of nicotine produced in tobacco plants. These minerals are manganese and boron. Restricting the amount of manganese sharply decreased the amount of nicotine and the reduction of boron greatly increased the nicotine content in plants grown under laboratory control conditions.

Growing Luxury Market

Producers of luxury items such as perfumes and Cadillacs have good reasons to be optimistic for the future. This is because the growth of high-income families have been consistently increasing at a rapid and regular rate.

In 1929, there were 1,100,000 family units in the ten-thousand-dollar-and-over annual income group. In 1947 there were two million family units in this group and in 1954 it is estimated there will be 2,400,000 such families.

Ceremonial Perfume

The origin of perfume lies partly in religious ceremonies and partly in the life and ceremonies of Kings and Queens.

That it has not lost this significance was shown in the ceremonial anointing of Queen Elizabeth II.

The anointing and the crowning was one of the focal points of the whole Coronation ceremony. A secret mixture of oils, a formula which has been in the hands of the Dean of Westminster, was first devised for the coronation of Queen Victoria in 1838.

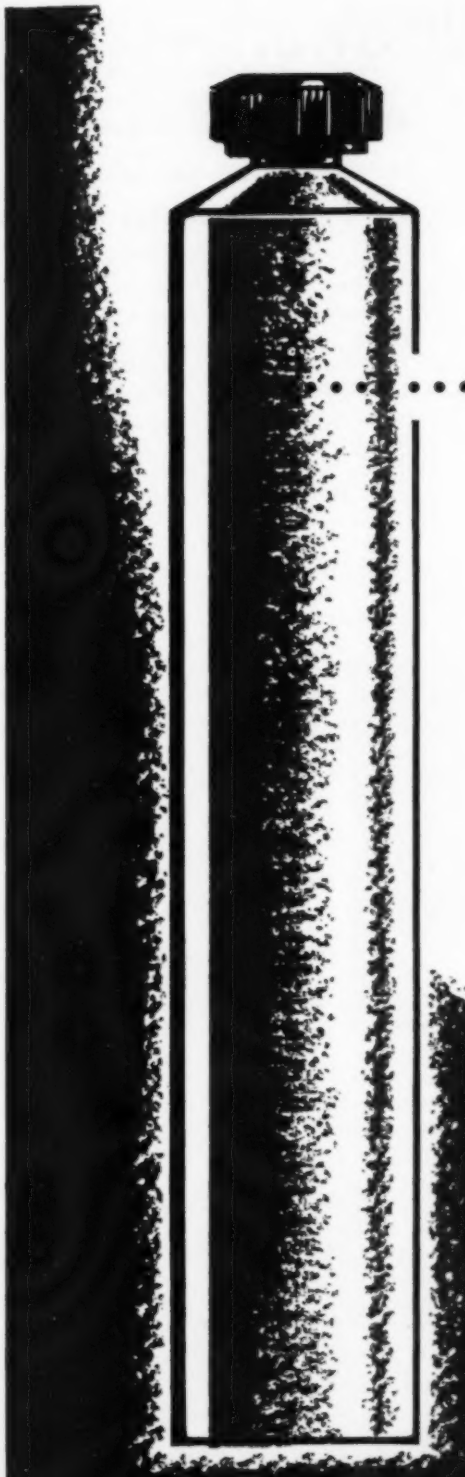
This secret formula is a mixture of the oils of orange flowers, roses, cinnamon, jasmin and sesame, with benzoin, musk, civet and ambergris. Perfumers will know from this formula the apparent likelihood that no perfumer has been allowed near it since 1838.

Believe in Success

In a recent court decision which held that the Government did not have a case against E. I. du Pont de Nemours on the charge of monopoly, the court ruled that the company should not be "punished for its success." That Cellophane is a competitive achievement, as well as an important social contribution, could not be disputed except by someone guided by the blind prejudice of some ideology.

Some of our leading institutions which have shown an enlightened sense of public responsibility have been severely harassed over recent years on the basis of a narrow and rigid definition of monopoly.

To ignore the social values and the creative achievements of these companies have not been to the advantage of American progress and to punish a company for its success has been about as dangerous a policy as could be adopted in this country.



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Careful and rigid inspection of liner and cap is one of the many steps Owens-Illinois takes to produce better, fully controlled quality.

when it's so easy to have our technicians help you select one that's exactly right for your product

CLOSURES PLAY AN IMPORTANT ROLE in the sale and resale of your product. They must be efficient . . . they must be convenient to use . . . they must be economical. So you must select yours with care.

Finding new and better liner materials for your product calls for evaluation under rigidly controlled storage conditions such as are provided by this humidity control cabinet.

Another control test with the precision penetrometer measures the hardness of waxes and other liner materials for closures.

Packaging as a sales tool is more important than ever before. Cap designs can actually help a product's sales. Here, careful matching of inks assures you bright, colorful closure designs to attract impulse sales

BEFORE:

On the left, something's needed to give this package the extra sell that makes the difference between many a "pick-up" and a "pass-by" in today's self-service selling.

AFTER:

On the right, this salespackage has *it*—a smart, colorful eye-catching closure-label design. It's easy to see why it helps draw impulse sales. The product will now flag attention at knee-level as well as eye-level position.

PRECISION CLOSURES
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

We need the kind of legal and political thinking that will step in when the wrong kind of a monopoly or the wrong kind of competition exists. But fully as much we need the kind of enlightened philosophy which will encourage creative effort and encourage a company which demonstrates that it is run on the basis of enlightened public relations.

Dangers in Diversification

Diversification has become a potent force in industry thinking and may in a sense reach the status where some businessmen are so convinced it is the right thing to do that they fail to analyze some of the troubles that may lie ahead in such a program. The desire to eliminate industry or product cycles and unhealthy sales fluctuations is a noble and sometimes a necessary policy for some companies. On the other hand, an eagerness to crowd over into the other fellow's pasture, aside from the nobility of this thought, is not always a smart one.

Some other industries, notably the heavy chemical, the liquor and the food industry have been moving over into parts of this industry as desirable paths for diversification. This movement is also noticeable in the retail trade. Some stores may soon reach a point where the consumer is confused as to their basic function and where rabid price cutting for survival may be the ultimate thing. We have stated before in these columns that we believe the grocery super-market is headed for serious trouble in some of the non-food divisions they have expanded into. Worse still, we think that the grocery super-market is going to bring some day the biggest headache the manufacturers of this trade have ever had.

Where They Buy

A recent study of HOUSEHOLD Magazine reports the following place of purchase for cosmetics and toilet preparations among their readers:

Drug Stores	55.1 per ceut
Grocery Stores	36.7 per cent
Other	19.3 per cent

Variations in Consumption

One of the most difficult things to explain in distribution and in consumption is the wide variation in territories or communities in the way any product is distributed or consumed.

This phenomenon, if that is the right word, can be observed in nearly every survey and is particularly noticeable in the city panels made by newspapers organized under the Milwaukee panel plan. It can be seen also in a study of the per capita consumption by states of products reported by the Treasury on excess tax collections.

Now Printers Ink, in an analysis of average family expenditures of different commodities in representative cities, shows how widely even a broad classification such as cosmetics, perfumes and toilet preparations will vary from city to city with little direct relation to personal or family income.

These city statistics, extracted from reports of the Department of Labor, cover a wide range of consumer goods. In each of these classifications the same inexplicable variation appears from city to city.

We wonder how many companies are still following the old fashioned quota system, presenting their salesmen with a rigid quota based upon county or territory income report, automobile ownership, number of telephones and such other indicators, average wealth or cultural development. Evidently quotas figured on any such basis can be grossly misleading.

Following is a tabulation of the average family expenditures in the cities reported:

City and State	Toilet Soap	Tooth Paste, Mouth Washes, etc.	Cosmetics, Perfumes, Hair Preparations Deodorants, Lotions, etc.
Albuquerque, N. M.	$10.35	$ 9.85	$17.32
Atlanta, Ga.	7.20	7.85	9.13
Baltimore, Md.	9.57	9.06	9.92
Birmingham, Ala.	9.02	6.82	9.82
Boston, Mass.	8.88	10.24	9.99
Butte, Mont.	9.22	6.65	10.67
Canton, Ohio	12.13	8.83	12.01
Charleston, S. C.	9.63	8.14	8.77
Charleston, W. Va.	10.16	10.85	14.00
Charlotte, N. C.	8.41	8.11	11.79
Chicago, Ill.	9.56	8.69	11.08
Cincinnati, Ohio	8.48	6.66	8.99
Cleveland, Ohio	10.57	7.36	8.46
Des Moines, Iowa	6.91	8.00	11.49
Evansville, Ind.	8.92	7.21	11.20
Hartford, Conn.	7.62	7.51	8.34
Huntington-Ashland, W. Va.	8.03	8.90	9.73
Indianapolis, Ind.	8.69	5.91	9.44
Jackson, Miss.	10.40	9.93	13.32
Kansas City, Mo.	9.56	8.32	16.21
Little Rock-No. Little Rock, Ark.	6.70	7.55	11.11
Los Angeles, Calif.	6.11	7.48	13.52
Louisville, Ky.	9.76	8.60	9.52
Madison, Wisc.	6.27	7.68	10.11
Miami, Fla.	8.51	8.63	13.78
Milwaukee, Wis.	7.36	8.41	8.81
Minneapolis-St. Paul, Miss.	6.62	7.84	11.41
New Orleans, La.	8.10	10.12	10.25
New York City, N. Y.	9.73	8.17	10.52
Northeastern New Jersey	10.53	8.93	11.00
Norfolk-Portsmouth, Va.	10.51	8.20	10.51
Oklahoma City, Okla.	7.34	8.79	19.07
Omaha, Nebr.	8.23	6.87	10.06
Philadelphia, Pa.-Camden, N. J.	11.97	9.93	8.76
Phoenix, Ariz.	6.60	6.32	9.32
Pittsburgh, Pa.	11.81	9.39	9.70
Portland, Me.	12.21	7.89	8.70
Portland, Ore.	4.92	6.07	9.55
Providence, R. I.	10.08	8.40	8.51
St. Louis, Mo.	8.98	8.79	10.95
Salt Lake City, Utah	8.41	8.18	17.51
San Francisco, Oakland, Cal.	6.93	7.98	12.54
San Jose, Calif.	8.42	8.36	9.92
Scranton, Pa.	8.17	7.37	6.42
Seattle, Wash.	6.69	6.56	9.47
Sioux Falls, S. D.	5.90	6.63	10.87
Wichita, Kan.	6.05	7.78	9.09
Wilmington, Del.	11.96	11.32	10.62
Youngstown, Ohio	9.73	8.01	9.43

Potent Packages

According to Walter P. Margulies of Lippincott & Margulies, industrial designing firm, the importance of the package increases as the vast sums being spent to advertise package products increases. The impact of advertising, he states, has been dimmed by the time the consumer reaches the point of purchase and thus the package itself must close the gap between preselling and the final selling.

KING SIZE
1 ounce capacity
PURSE SIZE
½ ounce capacity
Your Stick Deodorants...
Facial and Hand Creams...
Solid Cologne...Stick Perfumes...
After Shave Lotions...
Swivelpak®
NO MOULDING REQUIRED . . . PRODUCT CAN BE POURED DIRECTLY INTO CONTAINER
. . . ELIMINATES NECESSITY FOR COSTLY FOIL WRAPPING AND MESSY HANDLING.

CALUMET *Manufacturing Co., Inc.*

565 FIFTH AVENUE, NEW YORK 17, NEW YORK, MURRAY HILL 8-4270

PLANTS: NEW YORK CITY, BLOOMFIELD, N. J

IN CANADA: CALUMET DIVISION OF ERIC H. HARDMAN, LTD. 137 WELLINGTON ST., WEST, TORONTO, CANADA *PAT. PEND.

Glass Aerosol

This industry has been waiting quite a while now for the glass aerosol container. Quite a lot of research work has been done on this by drug and cosmetic companies, by the glass container manufacturers and by the valve manufacturers.

Zonite is the first to come up with a practical method for using a glass bottle with an aerosol top. Zonite's method is called low-pressure system. The basis of this system, as we understand it is, a combination of a low-pressure charge of Freon 114 and a product which has a high percentage of alcohol.

The first product commercially launched in a glass bottle with aerosol pressure was a 2-oz bottle of cologne by Zonite. This, however, was confined to the Latin-American market. The first domestic aerosol glass bottle product is Primrose House Cologne Mist, a 2-oz. bottle of cologne.

The first cologne among the higher-priced perfume houses is Carven's MIS-S-S-ST-FIER. This is a beautiful bottle, of frosted glass, containing three well-known Carven odors.

Many people in this industry have been enthusiastic boosters for the aerosol method of dispensing for many products both in the cosmetic and in the medicinal branches of this industry. These people believe that the solution of the problem of using a glass bottle for aerosol would greatly expand the use of this dispensing method, particularly in the higher-priced or prestige cosmetic and perfume branches of the industry. It looks as if a solution to this problem is well on the way.

Point of Sale—Glamor or Economy

When the super-market first began to claim national attention, it was heralded as a great new development in American economics that would cut the cost of distribution. As many enthusiasts said in speeches and articles, we have been through the industrial revolution where industry has drastically cut the cost of manufactured goods by inventions in machinery and by production techniques. These cost reductions, they said, have been absorbed and nullified by rising cost of distribution. Now with the super-market self-service, we were supposed to enter a new era in the distribution revolution, in which distribution costs year by year would decline and thereby make a great contribution to mass consumption and better living standards.

During the last two years, however, there have been increasing reports in the newspapers that super-market competition is bringing about a chrome plated lot with hostesses and a galaxy of fancy doodads. It seems as if the A & P is the only one to resist what is becoming known as the "glamour derby" in the super-market race. Just to show what is happening, take a look at the newest Acme super-market in the so-called "Magic City Shopping Center" in Barberton, Ohio. In this store, according to one executive, architects, decorators and skilled workmen cooperated to create "a thing of beauty" in yellows, browns and oranges highlighted with splashes of more brilliant color to point up several areas. There is a series of eight large photo murals and the store is lighted with new de luxe warm fluorescent slim-lime tubes and air-conditioned throughout.

There is a customers' lounge, an amusement area to park the children, a number of customer U-ask-It stations scattered around and all sorts of other modern glamour sales appeal.

Acme has a large toilet goods department, a soft goods department, a fancy food and snack section and a magazine rack.

As witnessed by the policy of the A & P, this super-market issue of whether to increase distribution costs has not been decided. It will be interesting to sit on the sidelines and see who wins out in the super-market race. That will be decided when the customers make up their mind whether they want glamour or economy at the point of sale.

Walk Outs

Walk-outs in Fifth Avenue stores are growing and include people who fail to buy almost 2/5ths of their planned purchase, according to a New York University School of Retailing Survey.

This looks startling but it is probably a mistake to attribute anything new to it. Previous surveys, although pretty hoardy with age, have shown that it takes "an average of three visits for a woman to buy such shopping accessories as shoes, hats or purses." The excitement over the myth of one-stop shopping, self-service, etc. has been creating the impression that shopping is a grim business to be disposed of as quickly and as efficiently as possible. The truth is shopping is still to a large extent a pastime and a recreation and something that many women enjoy.

Since most successful retailers have an individuality, some often a vivid individuality and since many of them are generally recognized leaders in one or two particular departments or in some form of service, it would seem inconceivable in this age of individualistic competition that any store should expect to sell to a high percentage of women who enter their store everything that they originally had in mind to purchase.

Nutrition Again

"The battle of the bulge" is causing a greater furor over adult dietary habits than this nation has known in a generation. Dr. H. E. Robinson, Director of the Swift & Co. Laboratories, made this assertion and then said the "craze" for weight reduction among men and women could be a great aid to mental alertness, happy disposition and longevity if handled sensibly.

Dr. Robinson's idea is that the food industry should educate the public in common-sense reducing diets that tend to cut food intake "pretty much across the board." We would like to suggest to Dr. Robinson that any time a business or an industry devotes its time, money or talents to urging the public to cut down on buying their products, that will be an occasion calling for big black headlines in the nation's press.

Once again we say that this whole question of education in dieting, so far as retailers are concerned, belongs to the professional pharmacist where it would be received with respect by the public. This whole question of nutrition must be basic in the drug trade as part of their legitimate field for product expansion.

GOLDCÔTE VACUUM PLATED CLOSURES TO PLAY BIG ROLE IN 1954

Now available in any size and in several shapes, these closures with the beauty of metal offer such substantial savings as to make their use mandatory in many cases.

VACUUM PLATING PROCESS PRODUCES FLAWLESS FINISHES

Grueling acid, alkali, immersion, fading and abrasion tests have been passed with flying colors by the new GOLDCÔTE closures.

MISS AMERICA GOES FOR GOLDCÔTE

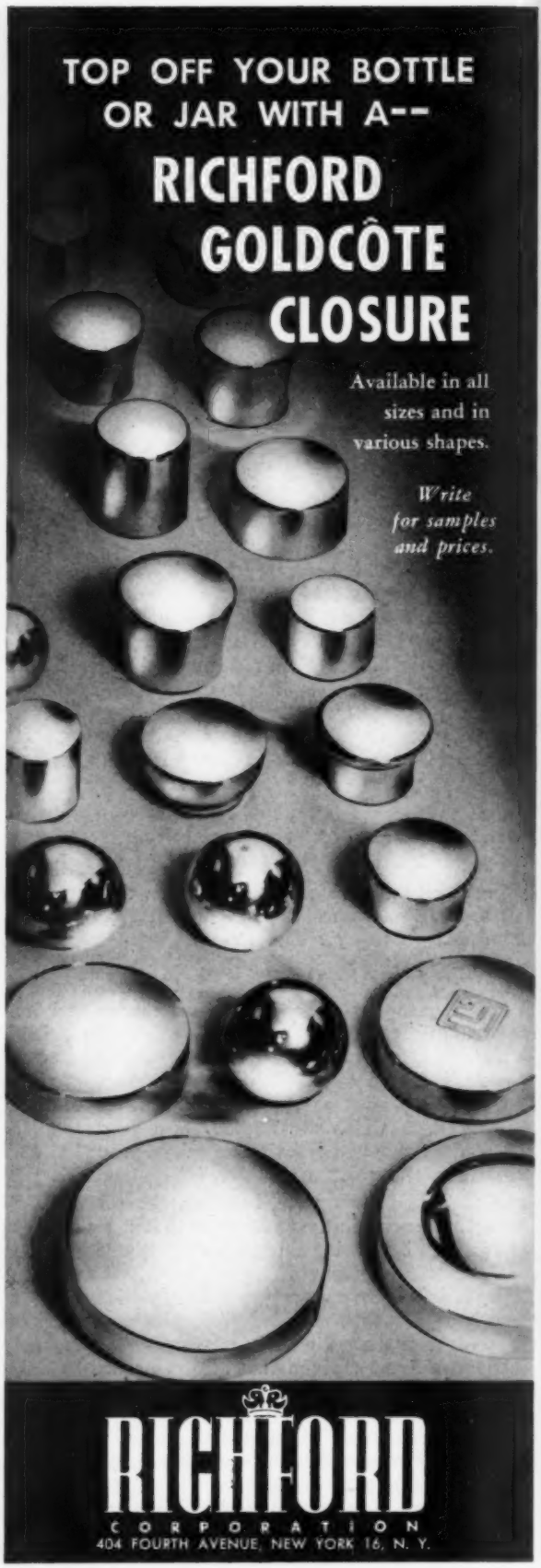
Sales-tested in all parts of the country, GOLDCÔTE has won immediate acceptance in the place where quality and value pay off, the store.

VACUUM PROCESS ALSO ADDS TO THE GLAMOUR OF RICHFORD SPILLPROOFS

Effective on both plastic and glass, this new process makes possible almost any combination of GOLDCÔTE or its companion finish SILVERCÔTE with the large Richford Family of square and round Spillproofs.

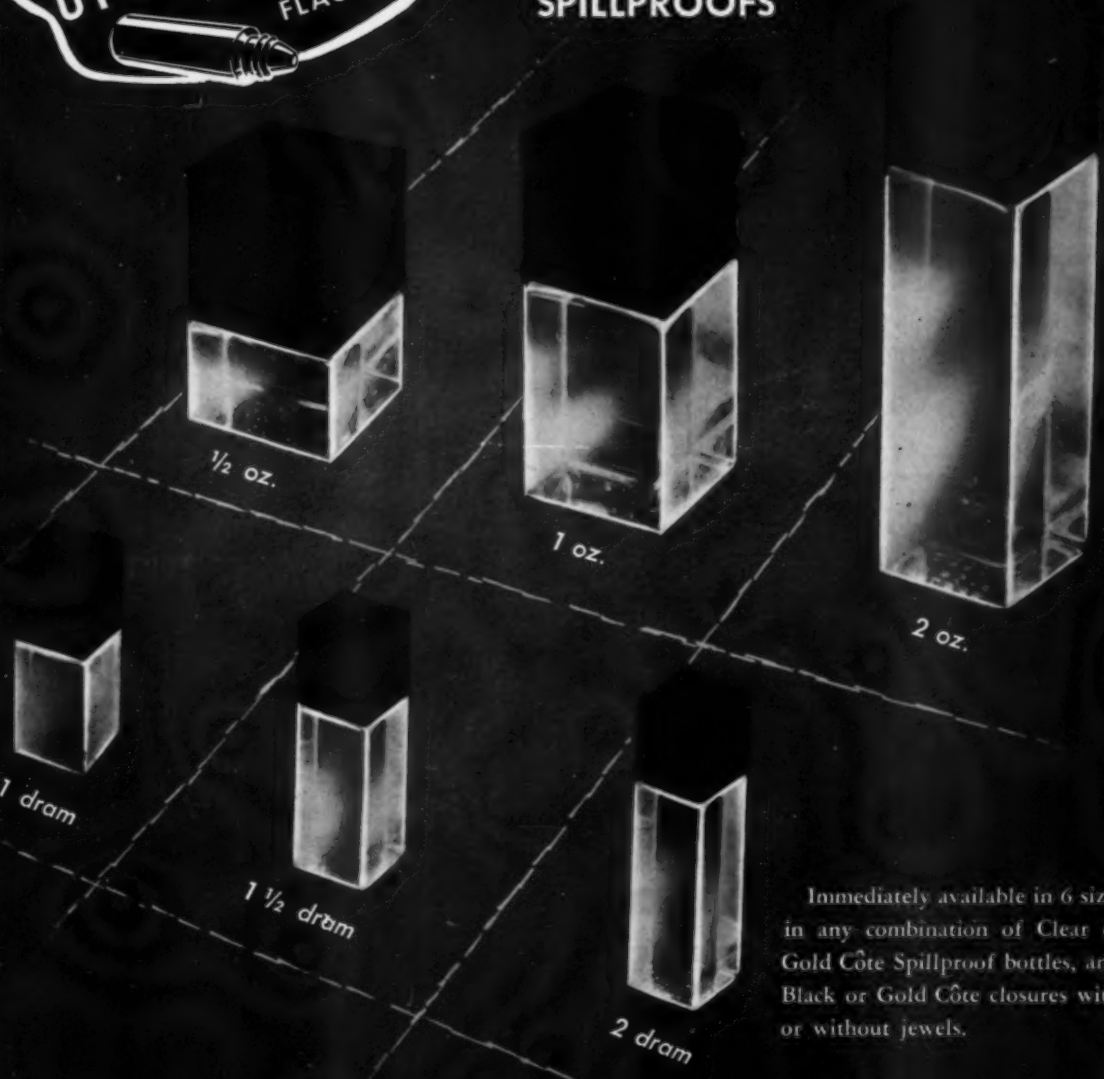
MANUFACTURERS WRITE NOW!

For samples and prices, and for complete information on the many services offered you by Richford, please write The Richford Corporation, 404 Fourth Avenue, New York 16, N. Y.


TOP OFF YOUR BOTTLE OR JAR WITH A--
RICHFORD GOLDCÔTE CLOSURE
Available in all sizes and in various shapes.
Write for samples and prices.
RICHFORD
CORPORATION
404 FOURTH AVENUE, NEW YORK 16, N. Y.

RICHFORD SPILLPROOF PERFUME FLACONS

. . . . . have done their part
Now let your Imagination
Run Wild with these
NEW SQUARE
SPILLPROOFS



Immediately available in 6 sizes in any combination of Clear or Gold Côte Spillproof bottles, and Black or Gold Côte closures with or without jewels.

The smartest lines in 1954
will feature these sensational flacons.

Write today for samples and prices.

RICHFORD
CORPORATION
404 FOURTH AVENUE, NEW YORK 16, N. Y.

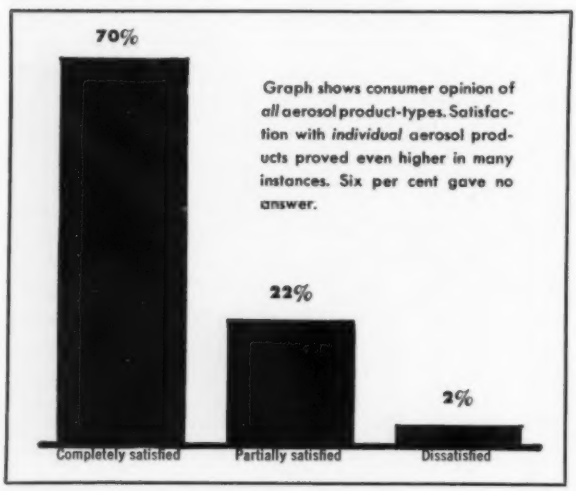
Big Swing to AEROSOL

Latest Du Pont Market Survey

7 OUT OF 10 USERS COMPLETELY SATISFIED

Tabulation of reports from 2600 families questioned during the Du Pont Company's sixth nation-wide consumer market survey covering aerosol-packaged products has now been completed. Once again it proves consumer preference for aerosols.

As shown in the graph below, of those who have purchased and used one or more aerosol product-types, 70 per cent (7 out of 10) stated that they were completely satisfied with the product. Only 2 per cent claimed they were dissatisfied.



Graph shows consumer opinion of *all* aerosol product-types. Satisfaction with *individual* aerosol products proved even higher in many instances. Six per cent gave no answer.

In answering the 6-page questionnaire, consumers in all 48 states revealed many important facts both about the market for aerosols and the aerosol method of dispensing various familiar products. Seven of the most popular of these products include the following: insecticides, household deodorants, paints, "Christmas snow," personal deodorants, hair lacquers and shave cream. In each answered questionnaire, consumers reported whether or not they had ever used these product-types packaged in an aerosol dispenser. If so, what did they think of the product . . . where had they made the purchase . . . how frequently did they buy products of this type . . . and what were their reasons for being satisfied or dissatisfied with it. Interesting to note is that more and more consumers in all age groups, income brackets and geographical locations are swinging to products that are now aerosol-packed.

AEROSOL HOUSEHOLD DEODORANT USERS INCREASE MORE THAN 100%

The Du Pont market study again points up a substantial increase in the number of users in every aerosol product category. For example, users of household deodorants packaged in aerosol containers increased from 24 per cent in 1951 to 44 per cent in 1953 . . . an upswing of 85 per cent! On the other hand, the number of users of the next most popular package-type of household deodorants declined somewhat. The table below lists several of the reasons consumers gave for preferring aerosol household deodorants.

REASONS FOR CONSUMER PREFERENCES

Quick, speedy	40 per cent
Effective	37 "
Easy to use	29 "
Economical	10 "
Clean, not messy	7 "
Pleasant odor	7 "

While some of the preferences indicated in connection with other aerosol product-types related only to those particular types, in each case the ease of application rated high as one of the most welcome features of aerosols.

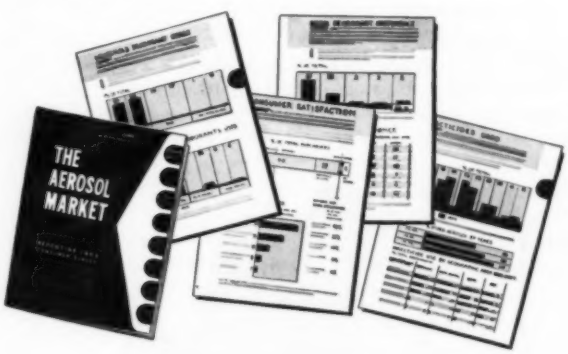
The study also included detailed reasons for dissatisfaction, as reported by the relatively few aerosol users who weren't satisfied with the product purchased.

PACKAGING Continues
Proves Consumer Preferences

LEADING POINTS OF PURCHASE

Type of outlet	Per cent of consumers purchasing aerosol insecticides	Per cent of consumers purchasing aerosol household deodorants
Food and grocery stores	31	44
Drug stores	22	14
House-to-house salesman	8	21
Department stores	14	8
Hardware stores	14	4
Auto service stations	6	1
Demonstrations (home)	2	6
Variety, 5 & 10¢ stores	5	3

In answer to the question "Where did you most recently buy an aerosol?"—by far the largest number of respondents indicated that, with respect to insecticidal aerosols and household deodorants, purchases had been made in food and grocery stores. Drug stores were rated next in line as outlets for aerosol insecticides, although note that house-to-house salesmen constituted the second most important point of purchase in the field of household deodorants.



AEROSOL MARKET DATA

Manufacturers of products packaged in modern aerosol containers welcome Du Pont's annual surveys of the markets for these products. These studies are a nationwide cross section of consumer buying habits and provide a pattern helpful in planning marketing and merchandising activities. Because all of this information relative to aerosols concerns everyone interested in the industry, high lights from the current study have been assembled in a comprehensive 32-page digest. This is now ready for distribution, and a copy of it will be promptly forwarded upon request on your letterhead. Write for it today.

MAJORITY OF AEROSOL MANUFACTURERS USE "FREON" PROPELLENTS

"Freon"* fluorinated hydrocarbon propellents are available to meet specific requirements of pressures, solubility, physical make-up and other characteristics of many basic product-types. They are widely used by manufacturers who have entered this fast-growing industry. "Freon" propellents are also safe . . . nonflammable, nonexplosive, noncorrosive and virtually nontoxic. They are manufactured in strict accordance with intricate, laboratory-controlled procedures. In addition, they are backed by years of Du Pont research in the field of fluorine compounds and are today recognized everywhere for their dependable purity and uniformity.

TECHNICAL AID IF YOU NEED IT

The packaging of a successful aerosol product requires that the propellent and the active ingredient be designed for each other. The Du Pont Company furnishes technical assistance in fitting the proper "Freon" propellent to the other ingredients of an aerosol product. A booklet, "Package for Profit," contains information of interest to anyone considering the possibilities of entering the aerosol business. Write for a copy: E. I. du Pont de Nemours & Co. (Inc.), "Kinetic" Chemicals Division, Wilmington 98, Delaware.

KINETIC

FREON

SAFE PROPELLENTS

**"FREON" is Du Pont's registered trade-mark for its fluorinated hydrocarbon propellents.*

DU PONT

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

Continental's plate inspectors are old-school perfectionists

OUR "CLEAN PLATE CLUB" HELPS YOU SELL

Clean, crisp printing plates—and only that kind—will make the handsome lithographed containers that sell proprietary products. So, though Continental has presses that roll at dizzying speed, one place we never try to save time is in the preparation of plates.

Continental's photo-compositors are perfectionists. They aren't happy until every last detail of your package design is faithfully caught on metal.

When they turn their plates over to the pressmen, there can be no doubt about the appearance of the finished container.

Fine lithography is only one of the services Continental offers its customers in the toiletries-drugs field. They range from package design to packaging machine maintenance. We'd like to show you how we tailor these services to your individual needs. Just give us a call.

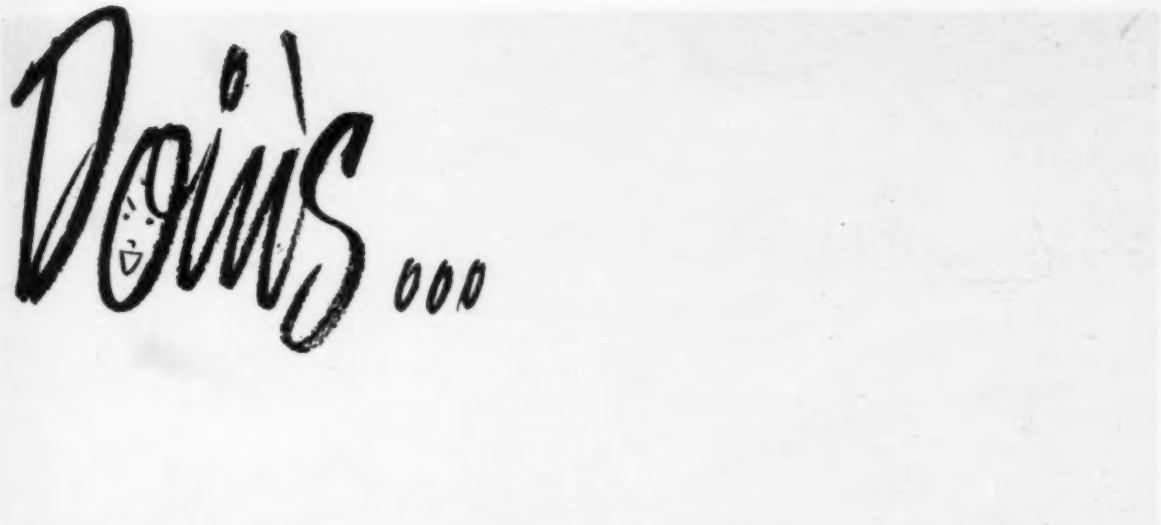
CONTINENTAL CAN COMPANY

Continental Can Building,
100 E. 42nd Street, New York 17, N. Y.

EASTERN DIVISION
100 E. 42nd St., New York 17

CENTRAL DIVISION
135 So. La Salle St., Chicago 3

PACIFIC DIVISION
Russ Building, San Francisco 4



George A. Breon & Co. has changed the trade name of Biotin, its injectable preparation, to Bioepiderm.

Daggett & Ramsdell has created a unique new open-face, three-cell carton for its Frozen Bouquet cologne sticks. The new carton, lithographed by the Lord Baltimore Press, contains three sticks—Debutante, Mystic Moment and Arabesque.

Northam Warren Corp. is now introducing by popular demand a new size Odorono Spray for 25 cents plus tax.

Pfizer is now marketing a line of Terramycin animal health products over the counter in drug stores—Terramycin Animal Formula Tablets and Soluble Powder. Pfizer Laboratories is handling the distribution of the new Terramycin Animal Formula line to drug stores, while the Agricultural sales division will continue to service feed stores. The new remedies are recommended for treatment of common infections of pets as well as those of livestock.

Almay has added two new products to its line of hypo-allergenic cosmetics: a powder-press make-up, Soft-lite, of specially selected ingredients formulated in seven shades for all complexion tones; and Almay Deodorant Spray which has a mint-fresh scent and is slightly antiseptic in action, thus retarding the decomposition of perspiration residues.

Almay has also announced that its new perfume, Truly Yours, for even the most sensitive skins, is now available in an attractive gold-colored metal purse-size flacon.

Schering Corp. has released Corcidin Pediatric Medilets for the relief of cold symptoms in children. The multi-colored, candy-like tablets have a cherry aroma and flavor and contain no caffeine.

Eli Lilly & Co. has announced two new products for immunizing simultaneously against diphtheria, whooping cough and tetanus—Tridipigen, Alum Precipitated, and Tridipigen, Fluid. The former is particularly recommended when immunization is begun before the age of six months, and the latter, for immunizing any adult or child six months or older.

Doeskin Products is now selling tissues in family-economy-size packages of 1000, retailing at 79 cents.

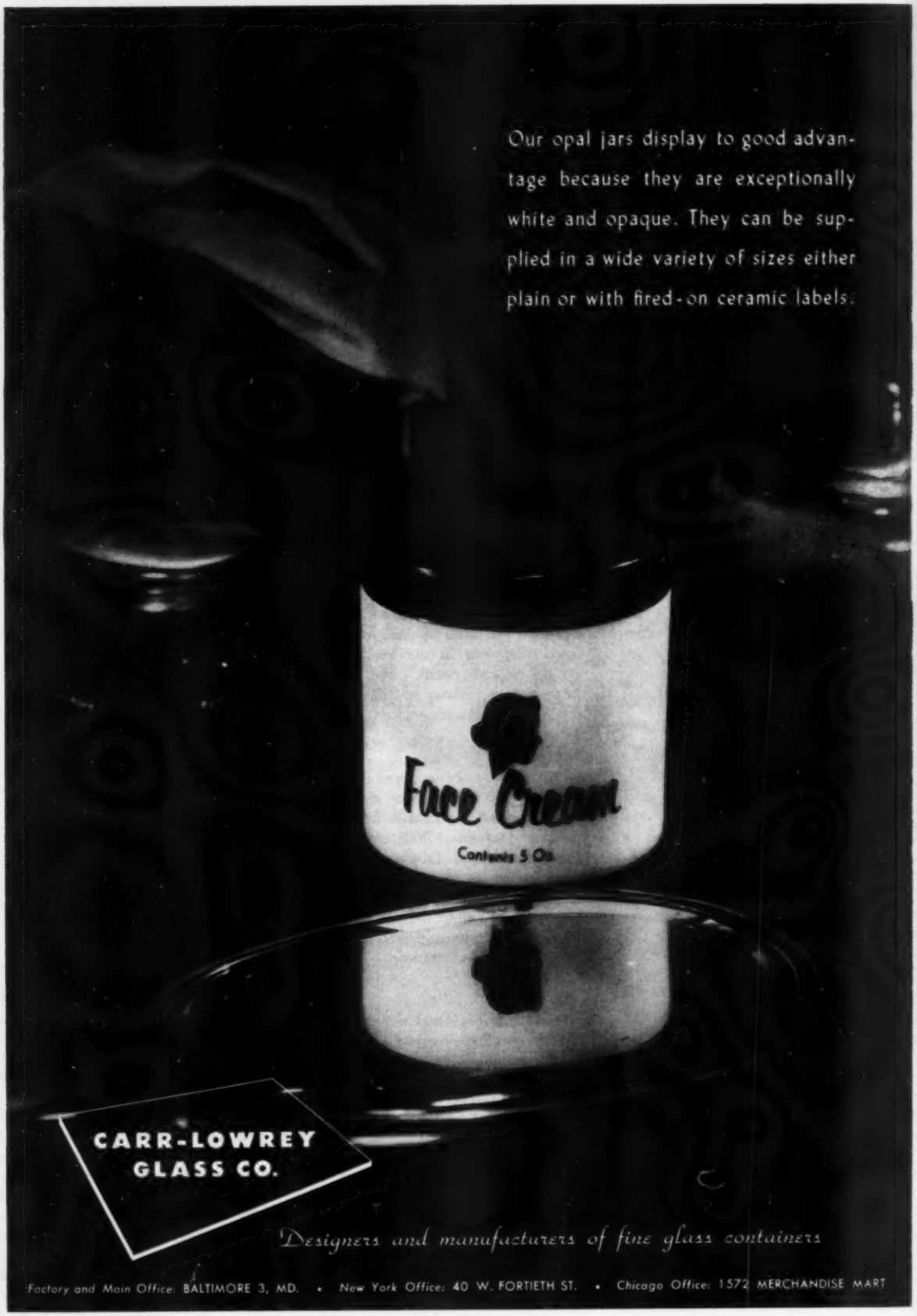
Abbott has introduced a handy powder form of Sucaryl Calcium Sweetener for persons who follow low-salt as well as low-sugar diets. Like the liquid and tablet Sucaryl, the powder leaves no bitter aftertaste and is non-caloric.

Abbott has also prepared "Film-Sealed" Erythrocin with Sulfas (Erythromycin Stearate with Triple Sulfas), which provides rapid blood levels well above the minimum inhibitory levels for most susceptible organisms. The use of the new Film Seal instead of an enteric coating facilitates swallowing and seals in the taste of the drug completely. It is indicated in infections caused by staphylococci, streptococci and pneumococci, especially in patients allergically sensitive to other antibiotics or where the organism is resistant.

Rohm & Haas is now making sodium lauryl sulfate in two forms, a paste and a low-salt liquid. The liquid is being marketed under the name, Triton AS-30; the paste, under the name, Triton AS-35.

Smith, Kline & French has a new product, Vi-Dexemin, specially designed for the control of weight during pregnancy. It is available on prescription only.

The Upjohn Company has announced the preparation of three prescription specialties: Erythroguent, Erythromycin ointment for the treatment of bacterial infections of the skin as well as to halt infection in burns; Syrasulfas, three sulfonamides suspended in a syrup of fruit-like flavor, for infections caused by organisms susceptible to the sulfas, such as pneumococcic and streptococcic; and Readicillin, crystalline penicillin G potassium suspended in a cherry-flavored vehicle, for penicillin-sensitive infections where high initial blood levels are required, especially for pediatric use.


Our opal jars display to good advantage because they are exceptionally white and opaque. They can be supplied in a wide variety of sizes either plain or with fired-on ceramic labels.
Face Cream
Contents 5 Oz.
CARR-LOWREY GLASS CO.
Designers and manufacturers of fine glass containers
Factory and Main Office: BALTIMORE 3, MD. • New York Office: 40 W. FORTIETH ST. • Chicago Office: 1572 MERCHANDISE MART

CROWN ~~SPRA-TAINER~~ Does It Again!

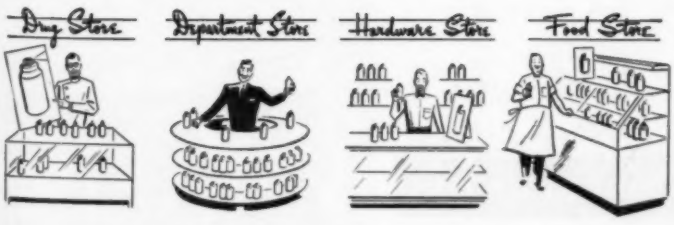
NOW-A-DAYS

MOST EVERYTHING

S-P-R-A-Y-S

You see it all around you . . . the irresistible Tide of Change which is surging out in all directions to carry one group of products after another into the "Modern Design" of pressurized SPRA-TAINER. Insecticides. Air Deodorants. Whipped Toppings. Shaving Creams. Lacquers and Enamels. These are just a few. Wonder "What next"? On this page you see more noteworthy signs of the *new* and *unusual* turns this tide is taking. The public is permanently *sold* on SPRA-TAINER. It's waiting to buy *your product* in this convenient, dramatic package.

The way to profitable and widespread pressure packaging was opened by Crown's invention of SPRA-TAINER, world's original lightweight propulsion can and still the leader because of exclusive seamless construction and "Modern Design" that SELLS. Creative Packaging similarly extends throughout Crown's entire line of cans to sell the products of many different industries. Good reason to call in a Crown Sales Representative whenever you need finest quality cans for any purpose.



CROWN CAN

PHILADELPHIA

Division of

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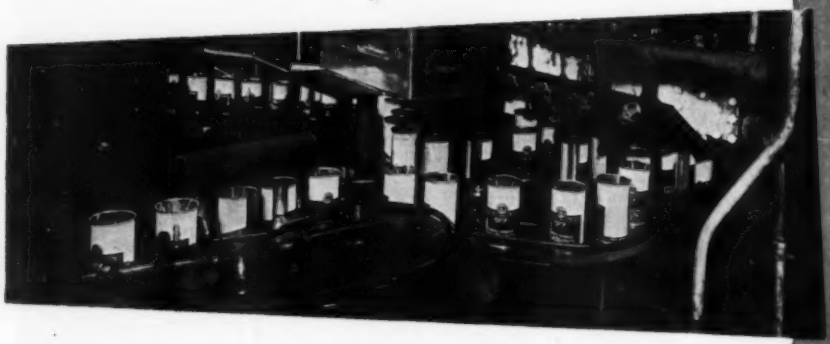
One of America's Largest Can Manufacturers

PHILADELPHIA, CHICAGO, ORLANDO, BALTIMORE, NEW YORK, BOSTON, ST. LOUIS

FOR PRODUCTS DISPENSED AS

Liquid, Spray and Foam .....



Here Are Your Midwest Filling Plants and Distribution Centers

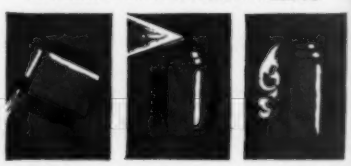
With two plants, centrally located at Danville, Illinois and Hobart, Indiana, Continental Filling Corporation offers manufacturers of drugs, chemicals, cosmetics, soaps, etc., a service which is hard to equal. We do not merchandise any packaged item. Our sole operation is *contract and custom filling* of containers with *your* products . . . liquid, pressurized or aerosol. Extensive modern facilities assure rapid service. Ample bulk storage space enables us to keep a good supply of your products available at all times. Even larger storage areas for packaged goods make it possible for you to use both our plants as central distributing points . . . and shipping departments are equipped to handle orders of any size. Long experience in all three types of filling for many of the largest manufacturers (as well as the smallest) gives you full assurance of satisfactory, economical service at all times. Write, wire or 'phone for complete details. There's no obligation . . . and we'll be glad to serve you.

WAREHOUSING FACILITIES

DROP SHIPPING IN BULK LOTS

* *NEW pressure dispenser for perfumes and colognes! Replaces atomizers.*

CONTRACT AND CUSTOM FILLING



LIQUID SPRAY FOAM

MAIN OFFICE • 123 NORTH HAZEL STREET, DANVILLE, ILLINOIS

CONTINENTAL FILLING CORPORATION

PLANTS • DANVILLE, ILLINOIS — HOBART, INDIANA

NEW PERFECTION = DROPPING PARTS

QUALITY UNIFORMITY CLEANLINESS SERVICE

#1

Non-rolling, extra-depth, Bakelite cap; thick flange rubber bulb; Saftee - ball glass.

#3

Regular plastic cap; thin flange rubber bulb; semi-blunt glass.

#4

Metal cap; oil-resisting Amekine synthetic rubber bulb; blunt glass.

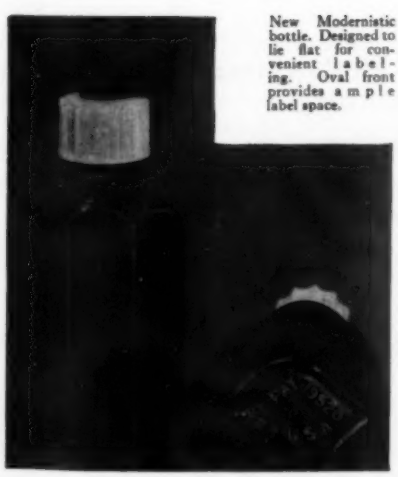
By the Originators and World's Largest Manufacturers of Screw-Cap Dropping Parts

Since 1931, when the screw-cap dropping part was originated by Pennsylvania Glass Products, the world-wide acceptance of New Perfection has been increasing. The fact that the New Perfection Dropping Part is the most practical and sanitary dispensing unit for liquid preparations accounts for its popularity and the steady growth of our operations is due to the efficiency with which our products are manufactured and distributed.

Our exacting standards for quality, uniformity and cleanliness guarantee that each shipment will meet your most rigid specifications. Our policy is to produce and sell the best in dropping parts—and thus merit your continued patronage in the future as we have in the past.

#2

Non-rolling, extra-depth, Bakelite cap; thick flange rubber bulb; special bent glass (CALIBRATED in color)



New Modernistic bottle. Designed to lie flat for convenient labeling. Oval front provides ample label space.

New Perfection Dropping Parts, either plain or CALIBRATED IN COLOR, can be supplied to fit your bottle or with our new Modernistic style bottles. Our bottles are available in Amber, Blue, Green or Clear glass in 2 cc, ⅛, ¼, ½, 1 and 2 oz. capacities. Special oil-resisting AMEKINE synthetic rubber bulbs can be supplied for use with oil products, or natural rubber bulbs for general usage.

Write for Samples and Quotations

PENNSYLVANIA GLASS PRODUCTS CO. INC.

"Glass Goods of the Better Kind"

430 N. CRAIG ST. • PITTSBURGH (13), PA., U.S.A.

Physical uniformity and controlled purity

—good reasons for choosing

Baker FINE CHEMICALS

Baker
CHEMICAL
ACETOPHENETIDIN, U. S. P., Powder
CALAMINE, U. S. P., Powder
IODINE, U. S. P.
CHLOROFORM, U. S. P.
POTASSIUM ACETATE, N. F., Granular
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News . . .

Pfizer Exec. Promotions

John J. Powers, Jr., has been promoted from vice-president to senior vice-president of Chas. Pfizer & Co. Jasper H. Kane, director of research and development, and Thomas J. Winn, general manager of Pfizer Laboratories division, have both been elected vice-presidents.

Mr. Powers joined the company in 1941 as head of the legal department and was made assistant to the president in 1945. Four years later he was elected secretary and a director of the company. He became a vice-president and member of the executive committee in 1951.

Orr Named Executive V.P.

George W. Orr, Jr., vice-president in charge of sales of Ames Co., Inc., has been elected to the newly created office of executive vice-president, according to Charles F. Miles, president.

Siegrist Joins Schering

Dr. Jacob C. Siegrist has been appointed veterinarian in the biological research department of Schering Corp., according to Robert E. Waterman, vice-president.

Green with Strong, Cobb

Harold C. Green, for 21 years eastern division sales manager of L. Sonneborn Sons, Inc., has been named eastern regional sales manager for Strong, Cobb & Co., Inc., and its subsidiary, American Chlorophyll division, according to M. M. Ricketts, president of Strong, Cobb.

Roche Names Two V.P.'s

Dr. Elmer L. Sevringhaus, director of clinical research, has been appointed vice-president in charge of clinical research by Hoffmann-La Roche Inc.

Dr. John A. Aeschlimann, director of chemical research, has been appointed vice-president in charge of chemical research.

McCurry Heads Schenley

R. Blayne McCurry, formerly copy director of Abbott Laboratories, has been appointed president, and a director, of Schenley laboratories, pharmaceutical sales subsidiary of Schenley Industries, Inc., according to Lewis S. Rosenstiel, chairman of the board.

He has been succeeded in the Abbott post by William D. Pratt, formerly a copywriter, according to Charles S. Downs, vice-president in charge of advertising and public relations.

JOHN J. POWERS, JR.

HAROLD C. GREEN

R. BLAYNE McCURRY

Breon Sales Staff Changes

Robert S. Bunning has been appointed regional sales manager of George A. Breon & Co. in the Midwest, supervising the firm's sales program in 15 states centered around Illinois. He will maintain regional headquarters at Evanston. He had formerly been manager of Breon's North - Central states sales division.

Chester W. Vogelsang has become divisional manager and assistant to William J. Briggs, regional sales manager in the Southwest region. He will be in charge of operations in New Mexico and parts of Texas, with his sales offices in San Antonio.

Willard H. Rylatt has been appointed manager of a newly formed sales division covering the states of Colorado, Montana, Kansas and Missouri, with headquarters in Colorado Springs. He has represented the company in Colorado since 1948.

New Research Center

Personal Products Corp. held groundbreaking ceremonies at Milltown, N. J., on December 11 for its new $500,000 research center. P. D. L'Hommedieu, chairman of the board presided at the ceremonies, while George H. Murphy, president, told how the research center will contribute to the progress and growth of the company. Among company directors and officials present were R. L. Atkinson, director of research and development, and Walter J. Metts, vice-president in charge of manufacturing.

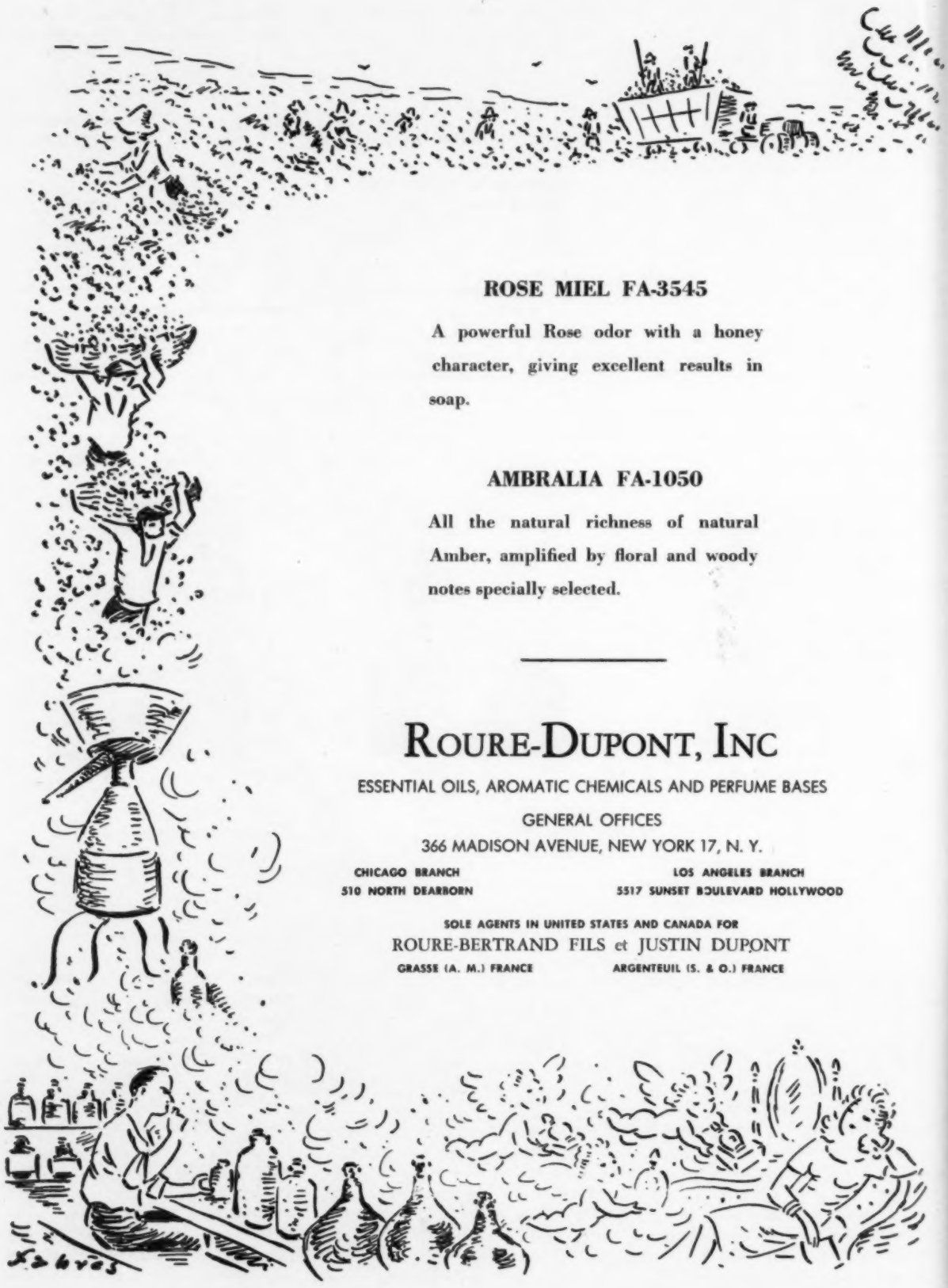
Functions of the new research center will include technical and scientific research and development, and consumer research in connection with the company's products. It will serve the company's plant in Milltown, N. J., the Chicago plant, and the new West Coast plant now under construction in Sunnyvale, Calif.

Cutter Appointments

William P. Muller has been appointed director of research administration and Dr. Fred F. Johnson, associate director of research, by Cutter Laboratories, according to Dr. Howard M. Winegarden, vice-president and scientific director. Mr. Muller will simultaneously continue his duties as director of new product development, while Dr. Johnson will continue to direct the activities of the chemical research department.

Barry with van Ameringen

Van Ameringen-Haebler, Inc. recently moved its Chicago office to larger quarters at 201 North Wells Street. Richard Barry was simultaneously appointed sales representative, operating from the New Chicago office. He will serve perfume and aromatic users in the Midwest area.



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A powerful Rose odor with a honey character, giving excellent results in soap.

AMBRALIA FA-1050

All the natural richness of natural Amber, amplified by floral and woody notes specially selected.

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HOWARD P. McCLURE

ROBERT G. URBAN

EARL C. LENZ

Colgate Exec. Appointments

Howard P. McClure has been promoted to general sales manager of the toilet article department of Colgate-Palmolive Co., and Robert G. Urban has become merchandising manager of the same department, according to R. E. Hilbrant, manager. Mr. McClure has been in charge of sales for the Kay Daumit division since 1946 when Colgate acquired the brand through the purchase of Kay Daumit Inc.

Mr. Urban joined Colgate as a toilet article department salesman in Indianapolis in 1946. He since has served as Cincinnati district sales supervisor, Buffalo district sales manager, and assistant merchandising manager in the Jersey City home office.

Heads Verley Sales

James H. R. Stephenson has been promoted to manager of sales by the Verley Chemical Co., a wholly-owned subsidiary of Albert Verley & Co., according to Edward J. Strobl, president. He will be responsible for the aromatics manufactured by Verley Chemical.

New Depot for P-D

Parke, Davis & Co. officially opened a new 15,000-square-foot depot in the northeast section of Philadelphia on December 14. It will enable Parke-Davis to serve the physicians and pharmacists in the area better, through a smoother flow of merchandise.

Fred H. Stigale, Jr., manager, heads the staff of 26 employees operating the new depot, which comes under the supervision of the Baltimore branch office.

Officers of Cos. Chemists

The following officers were elected by the Society of Cosmetic Chemists at its business meeting on December 10 at the Hotel Biltmore, New York:

Donald H. Powers, Warner-Hudnut Co., as president; Kenneth L. Russell, Colgate-Palmolive Co., president-elect; Robert A. Kramer, Evans Chemetics Inc., secretary; Moody L. Crowder, Pond's Extract Co., treasurer; Ruth R. Bien, *Good Housekeeping Magazine*, director, and Thomas R. Farrell, editor, Drug & Cosmetic Industry.

Lenz Named Sales Head

Earl C. Lenz, formerly vice-president and general sales manager of Paisley Products, Inc., subsidiary of Morningstar, Nicol, Inc., has been elected vice-president of sales and advertising for the parent company and all its subsidiaries according to George J. Muller, president.

The new sales headquarters of Mr. Lenz will be located at the firm's executive offices in New York City.

Richford Moves Offices

The Richford Corp. has moved its executive offices, showrooms and shipping departments to 404 Fourth Ave., New York, in which building it occupies the entire second floor.

Richford is best known for its pioneering activities in the development of such packaging innovations as Spillproof purse flacon, Touch-N-Flo dispensers, and Push-Up containers. The company is now introducing new finishes on plastic closures, such as Silver-Cote and Gold-Cote.

Annual Meeting and Medal Award Dinner of Society of Cosmetic Chemists at Hotel Biltmore, December 10. Dr. Emil G. Klarmann, vice-president of Lehn & Fink, received the Medal Award.

The Odor of Beauty

While beauty has no distinctive fragrance, a proper fragrance always adds to beauty and desirability.

To enhance your product, you must have the proper fragrance to point up its qualities, increase its desirability and assure its success.

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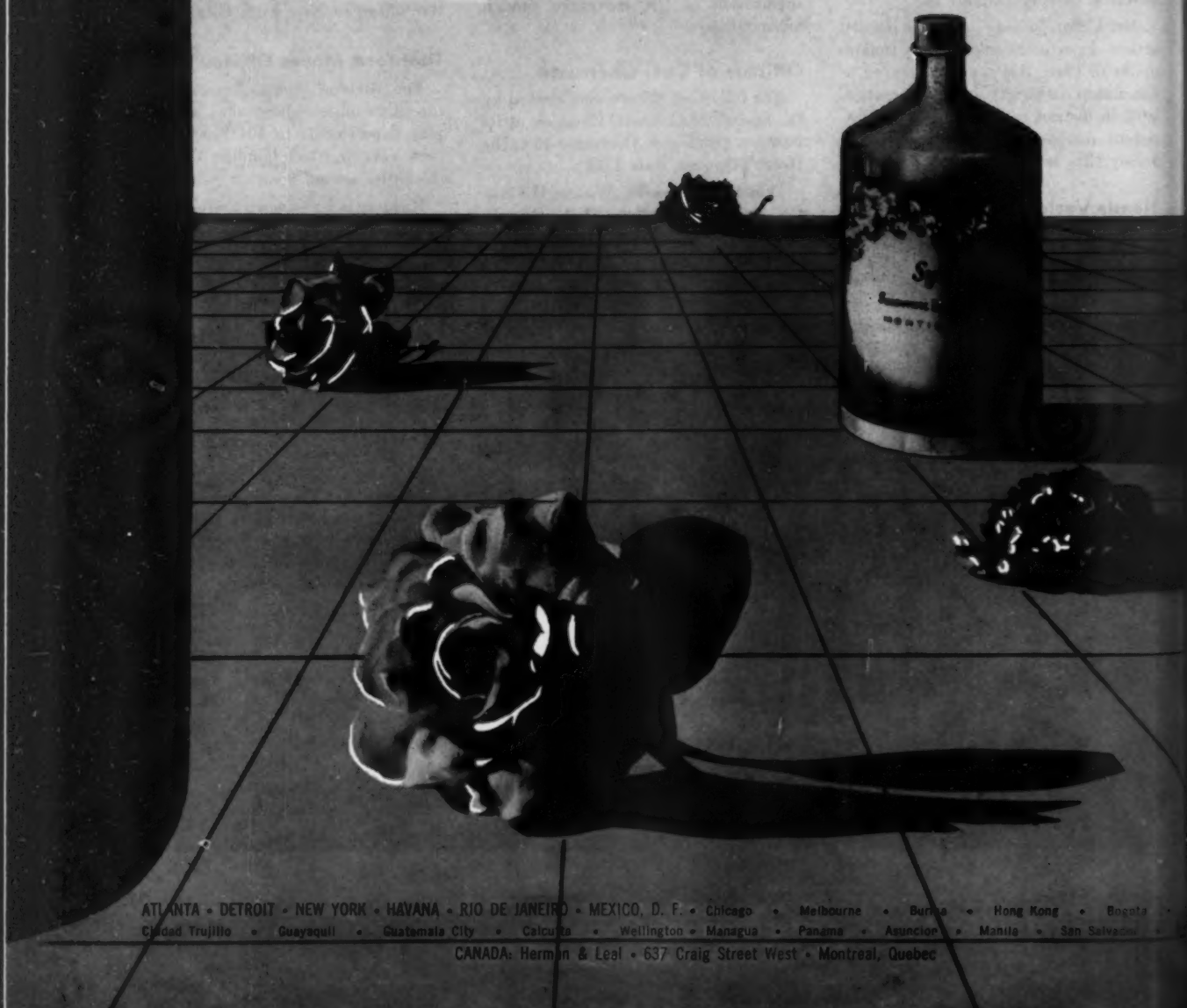

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Van-Ameringen Expansion

Due to increasing demand for its products and due also to the development of many new aromatic materials for which volume production facilities were required, van Ameringen-Haebler, Inc., found that existing facilities at Plant No. 1 in Elizabeth, N. J., could not furnish sufficient room for the required expansion. Accordingly a tract of 154 acres on the shores of Raritan Bay in Union Beach, N. J. was acquired. Nine completed units were in operation on this site at the close of 1953. A portion of the acreage has been cleared and fenced to contain present manufacturing operations. Present units consist of:

Research Laboratories
Still Room
Reaction Room
Power Plant
Hydrogenation Building
Phenylethyl Alcohol unit
Tank Farm
Electrical power units
Personnel facilities

The main laboratory covers more than 3,000 square feet. Annually some 300 new materials are developed and evaluated for use in perfumery. The research building also contains separate analytical and control laboratories, technical library, administration offices and a dining room.

The still room covers about 4,000 square feet and houses distillation equipment up to 300 gallon capacity of original design.

The reaction room contains reactors of all types and sizes up to 1,000 gallon capacity as well as much other equipment including temporary storage tanks, gas holders, and a production size centrifuge.

The phenylethyl alcohol building houses a continuous process. Because of the highly inflammable nature of this process, solvent storage is provided in five 10,000 gallon underground tanks and the building is explosion-proof designed and completely protected by an automatic CO_2 system.

The tank farm provides storage facilities for bulk products. The largest units are three 15,000 gallon tanks.

Watson Promoted by Wampole

Milton A. Watson has been promoted to director of domestic sales by Henry K. Wampole Co. He is now directing distribution of all wampole products, prescription drugs and proprietaries as well, within the continental United States.

The van Ameringen-Haebler sales staff and representatives of the trade press are shown through the new van Ameringen-Haebler plant at Union Beach, N. J. Heading the delegation were A. L. van Ameringen, president, and Charles P. Walker Jr., executive vice-president of the firm.

Named V.P., Chem. Divisions

Louis Neuberg, vice-president in charge of sales of the Westvaco Chemical division of Food Machinery and Chemical Corp., has been appointed vice-president of the chemical divisions of that corporation, according to Ernest Hart, executive vice-president, Food Machinery.

The chemical division includes the two newly-formed divisions, Westvaco Chlor-Alkali division and the Westvaco Mineral Products division, as well as Buffalo Electro-Chemical Co., Inc., Niagara Chemical division and the Ohio-Apex division. Mr. Neuberg's office will remain at 161 East 42nd St., New York, where the administrative staff headquarters for the chemical divisions are now located.

Kohlstaedt in Lilly Post

Dr. Kenneth G. Kohlstaedt has been named director of the clinical research division of Eli Lilly & Co. The personnel of this new division is made up of clinicians and technical personnel on the staff of the Lilly Laboratory for Clinical Research at Indianapolis General Hospital.

KENNETH KOHLSTAEDT

Tainter Elected by Academy

Dr. M. L. Tainter, director of the Sterling Winthrop Research Institute, was elected president-elect of the New York Academy of Science for a one-year term, beginning December, 1954. The occasion was the 136th annual meeting of the Academy of Science, at which Dr. Paul Fejos, director of the Wenner-Gren Foundation for Anthropological Research, was installed as president.

Klauber Named Advg. Mgr.

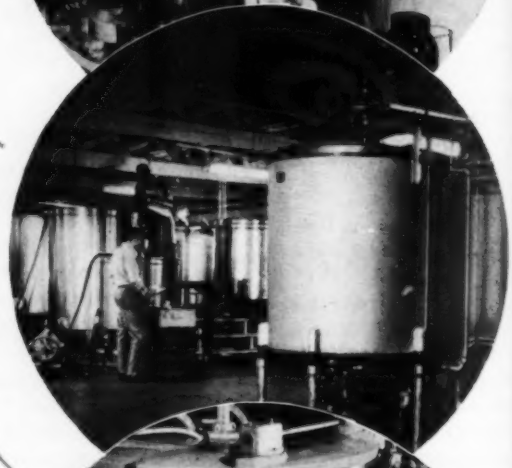
Herbert S. Klauber has been appointed advertising manager of Union Pharmaceutical Co., Inc., and Artra Cosmetics, Inc., according to Max McDaniel, vice-president of both companies.

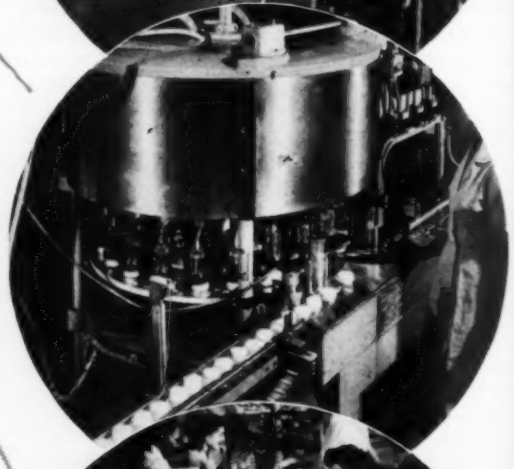
Mann Named Bristol V.P.

Dr. Charles H. Mann has been elected vice-president of Bristol Laboratories, according to Frederic N. Schwartz, president. He joined the company in 1952 as medical director, and will continue to act in that capacity as vice-president.

DR. CHARLES H. MANN

For Lower Cost COSMETIC PRODUCTION





IN the highly competitive cosmetic merchandising field, it is well for the cosmetic manufacturer-distributor to explore every possible means of reducing costs.

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1. Controlled High Quality of Product

Our chemical testing of raw materials, in-process and finished products assures you purity and uniformity to your formula.

2. Controlled Low Production Costs

Automatic and semi-automatic machines and skilled production lines, all scheduled for full-time operation, cut unit costs to the bone.

3. Lower Distribution Costs

Our location is ideal for shipping at lowest rates . . . also for quantity buying of all materials at lowest delivered prices.

4. Completely Confidential Service

Kolar's part in your manufacturing is never divulged. We ship under your labels. And your formula secrets are scrupulously protected.

5. Additional Profit Advantages

You have less capital tied up in plant and equipment . . . less payroll for cosmetic chemists and other specialists . . . less administrative and personnel problems . . . consequently, more resources for hard, profitable selling.

Get the Facts and Figures **relating to our manufacture, in whole or in part, of one or more of your cosmetics. Address your inquiry, in strict confidence and without obligation, to Pres. George G. Kolar.**

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JOHN C. JENNINGS

CHARLES S. MODYS

PAUL W. RODER

Sales Mgr. for Cont. Can

John C. Jennings has been appointed product sales manager of plastic bottles by Continental Can Co., according to E. F. Burke, sales manager of the company's Shellmar-Betner Flexible Packaging division. Sales of the plastic bottles, manufactured by the newly-acquired Elmer E. Mills Corp. subsidiary, are handled through the Shellmar-Betner division.

In his new capacity, Mr. Jennings will make his headquarters with Mills in Chicago.

Correction

Under the heading, "Wehmer Named Rhodia Rep.," on page 795 of the December issue, the final sentence read, "Prior to his du Pont position, Mr. Picard had been with Rhodia Chemical Co. for many years." This was in error and should have referred to Mr. Wehmer, not Mr. Picard.

Mr. Picard at no time has been associated with du Pont.

Givaudan Xmas Party

Givaudan-Delawanna, Inc. held its annual Christmas party on December 19 at the Swiss Chalet, Rochelle Park, N. J. Five employees, William D. Bickler, Dr. M. S. Carpenter, John Siemczyk, Hugo Soff and Peter Yansura were presented with gold Swiss watches during the party, in honor of their 26 years of service.

A sixth watch was presented to the wife of the late John Takacs, who died in August after a long illness, in honor of his recent silver anniversary with Givaudan.

About 350 employees of the Givaudan organization attended the get-together which was addressed by E. R. Durrer, president; Dr. Max Luthy, vice-president and plant manager; and H. F. Duffy, treasurer.

Ciba Named Two V.P.'s

Charles S. Modys has been appointed vice-president in charge of personnel, and Paul W. Roder, vice-president in charge of advertising, by Ciba Pharmaceutical Products, according to T. F. Davies Haines, president. Mr. Modys had formerly been personnel director of Ciba and also of Ciba States Limited, while Mr. Roder had been advertising manager.

Bush on Rhodia Staff

Edward A. Bush, formerly with the Aromatic division of the Dow Chemical Co., has joined the staff of Rhodia, Inc., as manager of aromatic sales.

Rhodia, an affiliate of Rhone-Poulenc of France, recently reacquired the aromatics and compound business from E. I. du Pont de Nemours & Co. The many well-known aromatics, such as Alpine Violet, Astrotone, Rhodione and other specialties will again appear under the Rhodia label. A plant for manufacturing was opened on January 1 in Paterson, N. J.

Win President's Award

The Hartford, Conn., sales division of Winthrop-Stearns Inc. and its division manager, A. J. Stauff, Jr., have been presented with the President's Award for 1953, according to Charles B. McDermott, vice-president in charge of sales. The award is given at the close of each year to the manager of the division judged to have made the outstanding record in sales of a selected list of the company's products.

Dr. Theodore G. Klumpp, president of Winthrop, presented the award to Mr. Stauff at a dinner on December 8 at the Hotel Astor. Dr. J. Mark Hiebert, executive vice-president of Sterling Drug Inc.; and Dr. Frank J. Stockman, Dr. Martin Lasersohn, Dr. J. B. Rice and Sidney C. Mills, vice-presidents, attended the affair.

The dinner concluded the firm's annual week-long conference for sales division managers. Round-table discussions were led by Mr. McDermott; Arthur W. Jensen, sales manager; and C. C. Wood, manager of retail sales.

Annual Christmas party of Givaudan-Delawanna, Inc. at Swiss Chalet, Rochelle Park, N. J., December 19. Pictured with three top executives are five employees, who have completed 25 years of service with company, receiving gold Swiss watches. Left to right: William Bickler; Dr. M. S. Carpenter; H. F. Duffy, treasurer; Ernest Durrer, president; Dr. Max Luthy, vice-president and factory manager; John Siemczyk; Hugo Soff; and Peter Yansura.

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Emery Research Center

Emery Industries, Inc., has started construction of a new $800,000 research center adjacent to their plant in Cincinnati. It will provide new and larger quarters for departments of basic research, development and chemical engineering. The two-story structure will house 28 individual laboratories in one wing with several "application" laboratories in the basement. The other wing will contain the research executive offices, library and conference rooms. The building is expected to be completed late this year.

Drawing of $800,000 research center which Emery Industries has started to build. It will provide new and larger quarters for departments of basic research, development and chemical engineering.

CIBS Officers Elected

The following officers have been elected for 1954 by the Cosmetic Industry Buyers and Suppliers (CIBS): William S. Fairhurst, Fleuroma, president; David S. Warner, Duveen Soap, first vice-president; John Duncan, Hazel-Atlas, second vice-president; George A. Kaempkes, Pacquin's, treasurer; Robert C. Ring, Hewitt Soap, corresponding secretary; Lamson Scovill, Scovill Mfg., recording secretary; and Ralph C. Zehner, Lentheric, and Donld E. Lavelle, Aromatic Products, as directors.

Jeeves Named P-D Director

W. R. Jeeves, vice-president and director of overseas operations, Parke, Davis & Co., has been elected to the board of directors. He will continue his responsibilities for the development of business in all countries outside the United States and Canada.

Peck Named Florasynth Rep.

Mel Peck has been appointed the new Texas-Oklahoma representative of Florasynth Laboratories, according to William Lakritz, president. He has had long and varied experience as chief chemist, production control manager and special representative in the food, ice cream, milk and bakery fields.

Bernard with Ungerer

Rene Bernard has been appointed director of management and research for the new Paris office of both Vidal-Charabot and Ungerer & Co. He is spending most of this month in the New York office, factory and laboratories, so as to become acquainted with company policy, and expects to leave for Paris the latter part of January.

Mr. Bernard was connected with Houbigant in Paris and Berlin from 1926 to 1928 when he joined Lentheric as technical director and perfumer in Paris. He then became director of research and development for Lentheric in New York, a post he has held up to the present time.

Atlanta Drug & Chem. Club

Harry S. Mehre, Coach at University of Georgia and Coach at Mississippi University, spoke at the December dinner meeting of the Atlanta Drug & Chemical Club, Inc., on December 18.

Adams with Cont. Can

Dr. Frederick W. Adams, formerly of the Spool Cotton Co., has become director of research and development for the Millsplastic division of Continental Can Co., according to C. E. Maier, general manager of research. He will make his headquarters at the company's research division in Chicago.

Massey, Wampole Sales Mgr.

Noble C. Massey, representative of Henry K. Wampole & Co., has been appointed district sales manager for the southeastern part of the United States. He will continue to make his headquarters in Memphis. Milton A. Watson, formerly in Mr. Massey's post, recently moved to Philadelphia as director of domestic sales for all Wampole products.

Promoted by Pfizer

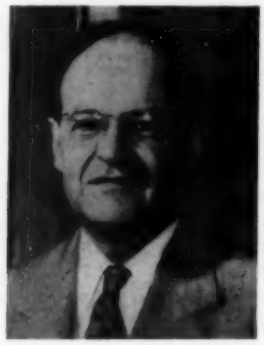
Dr. Karl J. Brunings and Dr. Ernest M. Weber have been promoted to the posts of director of chemical research and development and director of biochemical research and development, respectively, by Chas. Pfizer & Co., according to Jasper H. Kane, vice-president. They had both been associate directors in their respective departments.

Rose Forms New Company

Gene Rose, a leader in the field of aerosol packaging, has organized Gene Rose Co., Inc. as an affiliate of the Scientific Oil Compounding Co., 1637 South Kilbourn Ave., Chicago. The new company will specialize in quality production of pressurized dispensers and will offer confidential product development work, as well as complete packaging services.

MEL PECK

DR. FREDERICK W. ADAMS



GENE ROSE

Jac. Polak Retires

Polak's Frutal Works, Inc. of Middletown, New York announced the retirement on January 1st of its president, Jac. Polak, who has been connected with the essential oil industry for more than half a century. Mr. Polak will continue as chairman of the board. His elder son, Frits J. Polak, becomes president. Other officers are: Bernard Polak, Vice President; Alexander H. Micheels, Ass't Vice President; John ter Veer, Secretary; Erik Vles, Treasurer; Ernest Polak, Director of Research.

Some 40 years have passed since Jac. Polak, with his brother Henri, founded Polak's Frutal Works, N.V. in Amersfoort, Holland. From a small beginning, the company made rapid progress. By 1916 a large factory had been erected. Salesmen were sent to all the important foreign markets and agencies set up throughout the world. Branches were established in various European countries, and a second plant was built near London in Perivale, England, to serve more efficiently the growing market in the United Kingdom.

The American company was incorporated in 1921 and went through several stages of expansion. In 1937, a manufacturing plant was acquired in Long Island City, N. Y. This proved to be most fortunate when Holland was overrun in 1940 and communication with the parent company broken off. Thanks to careful planning for such an emergency, the American company was able to take up the production of the complete line of Polak's products. The clientele was thereby assured of continuity of supplies and uniformity of quality.

By 1946, Polak's Frutal Works, Inc. had again outgrown its facilities. Having decided to forsake the city for more adequate surroundings, the company transferred its operations to a greatly enlarged plant in Middletown, New York. The main seat of the organization was set up in the U.S.A. and became the headquarters for the worldwide activities of Polak's Frutal Works and its associated companies in Holland, England, Belgium, France and Germany.

The company also maintains a branch office in Chicago and agencies and stocks in various cities in this country and in Canada.

Despite the retirement of its founder, under whose far-seeing leadership the company attained its present position the organization will continue to draw on his experience and judgment.

Executives, department heads and sales representatives of Fritzsche Brothers, Inc., meeting at luncheon during annual staff meetings he J in Hotel New Yorker from December 8 to 11.

Fritzsche Annual Meeting

Fritzsche Brothers held one of the most successful annual staff meetings it has ever had during the early part of December. Representatives of all divisions—sales, executive and technical—participated in the 4-day sessions.

F. H. Leonhardt, chairman of the board, delivered an official welcome to the group after which President John H. Montgomery discussed the well-coordinated program that was to follow. The balance of the first day was occupied by executive discussion of matters concerning each division of management, and their relationship to sales. During the second day, a wide range of subjects reflecting the perfume division's past accomplishments and future program was presented.

Visits to company headquarters in the Port Authority Building by the entire sales staff occupied most of the third day. Sales discussions were resumed on the final meeting day, this time under the auspices of the flavor division.

Heads Med. Directors Ass'n

Dr. Norman L. Heminway, associate director and administrative assistant to the director of the division of clinical research of Schering Corp., was elected president of the Association of Medical Directors at the group's annual business meeting held in New York on December 4. He succeeds retiring president Dr. Justus B. Rice of Winthrop Stearns, Inc.

Other officers elected were Dr. Benjamin W. Carey, Lederle Laboratories, vice-president; and Dr. John B. Jewell, Ayerst, McKenna and Harrison, Ltd., secretary-treasurer.

Lehman Retires from P-D

Blaine R. Lehman retired on December 31 as manager of the Bay division of Parke, Davis & Co. at Bridgeport and Versailles, Conn., after 33 years of service. He has been succeeded by Roland T. Yale, assistant manager of the Bay division for the last four years.

Hazel-Atlas News

Hazel-Atlas Glass Co. has opened a new sales office in Louisville, Ky., located in the Martin Brown Building. J. Edward Porter formerly in the company's Cincinnati office, is manager.

George B. Dakan, sales in the Atlanta territory, has been appointed manager of that office. He succeeds C. V. Gowing who has retired.

The company has also announced the consolidation of its Kansas City and Oklahoma City sales offices. The sales activity previously conducted through the latter office will now be consolidated in the Kansas City branch, of which Brooks Gall is manager. Robert H. Short and Stanley J. Franzell are associated with Mr. Gall.

With Givaudan Flavors

Arthur G. Linde has joined the sales staff of Givaudan Flavors, Inc. and will handle the accounts in the New York-New Jersey area, according to Hans P. Kessler, sales manager. He has been associated with the aromatic chemical, essential oil and flavor industry for the past eight years.

Named Purchasing Agent

Philip Libson, formerly associated with Helena Rubinstein for eight years, has been appointed purchasing agent of Max Factor & Co., according to Davis Factor, chairman of the board.

PHILIP LIBSON

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U.S.I. CHEMICAL NEWS

January ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1954

Lack of Methionine Causes Hardening of Arteries

In work recently completed at a leading medical school, atherosclerosis, or hardening of the arteries, was produced in *Cebus* monkeys weighing between 1 and 2 kilograms by feeding diets high in cholesterol and low in methionine over periods of 18 to 30 weeks. Within two to eight weeks this diet caused hypercholesterolemia, or high blood cholesterol level, with consequent atherosclerosis and lesions in the ascending aorta and other heart arteries. This condition was also dependent on adequate choline being furnished by the diet. Since both choline and methionine are biological methylating agents, this indicates that sulfur amino acids are directly involved in preventing high blood cholesterol levels rather than methyl-group donors.

It was found that the hypercholesterolemia could be largely prevented by feeding 1 gram per day of DL-methionine as a supplement to the diet. According to the report, once the hypercholesterolemia had been created by the diet, blood cholesterol level could be restored to normal by feeding 1 gram of methionine daily.

Small X-ray Source Offers More Versatility

A small, self-contained source of X-rays for use in industry and medicine has been announced as a likely commercial reality in the near future. The new X-ray source can be made in almost any size, from pellets to larger blocks or sheets, and is said to be entirely self-contained. It consists of a small quantity of radioactive material surrounded by a layer of heavy metal and is claimed to have the advantage of requiring no cumbersome equipment or wiring connections. The radiation emitted is essentially the same as that emitted by X-ray tubes but is reported to be of lower intensity.

Industry will probably use this easier-to-move X-ray source to expand X-ray inspection of vital parts which are difficult or impossible to X-ray with existing equipment. For medicine, the device is said to be potentially more flexible than the radium and radon now used in treating cancer and could conceivably be a valuable supplement to existing techniques.

Hydrazine Used to Remove Free Chlorine from HCl

Hydrazine, a strong reducing agent, has been used to remove free chlorine in the manufacture of chemically pure hydrochloric acid, according to a recent report. The hydrazine combines with the free chlorine to form hydrochloric acid and nitrogen, giving a chlorine-free acid. The amount of chlorine removed is reported to approximate 50 p.p.m. Convenience and economy are said to be the new method's advantages over additional scrubbing or the use of antichlors.

National Petro-Chemicals' New Synthetic Alcohol Plant Now in Production

Produces Industrial Chemicals and Petroleum Products

Production is now well underway at the new $45 million National Petro-Chemicals Corporation plant at Tuscola, Illinois. Built primarily to produce synthetic ethyl alcohol, the plant will produce about 125,000 gallons a day.

As the flow diagram shows, alcohol is produced from ethylene, which is obtained from the "cracking" of ethane. The ethane in turn is obtained by fractionating hydrocarbons extracted from the starting material: natural gas. The ethylene unit is the largest of its kind, cracking 10 million cubic feet of ethane a day into ethylene and hydrogen.

U.S.I. Plants on Site

To make use of the by-product hydrogen from the ethylene unit, U.S.I. is building a $7 million ammonia plant at Tuscola which is scheduled to start production in October, 1954. The plant is expected to produce 50,000 tons of ammonia per year. Some of this will be sold as anhydrous ammonia for industrial and agricultural use, but the bulk will be converted to nitric acid, from which ammonium nitrate will be produced and used for the making of nitrogen solutions. The nitrogen solutions will be sold to fertilizer manufacturers.

MORE

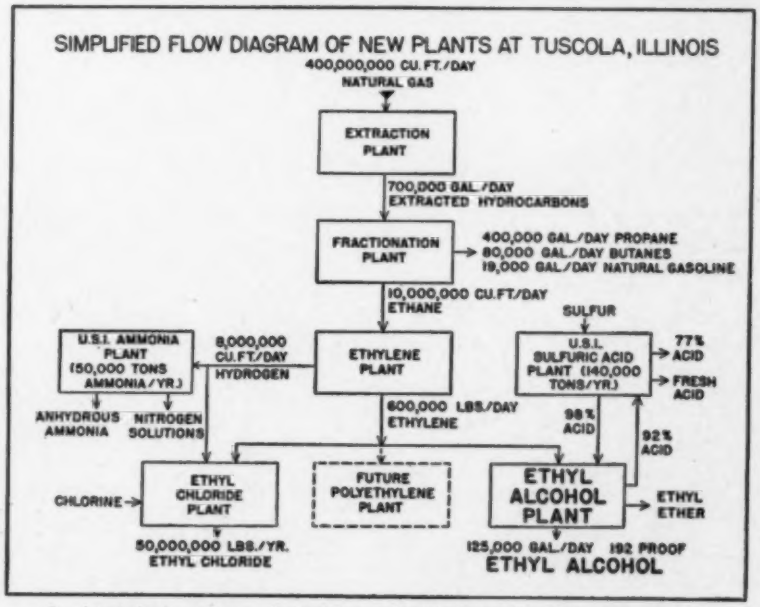
In the conversion of ethylene

Germanium Photocell Has Many Possible Uses

A tiny, bean-sized germanium photocell is said to be more sensitive to light than vacuum photocells a hundred times larger. It reportedly is so versatile that it can regulate industrial or domestic heating devices or guide missiles to their targets.

Still in the developmental stage, the new unit is claimed to have a comparatively large power output that could make it useful in many industrial applications. Among these applications would be the direct operation of relays to control production processes. Counting, sorting and measuring are other possible uses for the new cell.

The photocell could also serve as a substitute for a Geiger counter. Nuclear particles penetrating a germanium wafer inside the cell produce current which could set off light or sound warning equipment.



For detailed information, write for 40-page booklet "From Cornfields to Chemicals."

January ★ **U.S.I. CHEMICAL NEWS** ★ 1954

CONTINUED *New Synthetic Alcohol Plant*

to alcohol, large quantities of sulfuric acid are needed. To fill this requirement, U.S.I. built a $2 million sulfuric acid plant alongside the National Petro-Chemicals facilities. After the acid is used in the alcohol unit, it is partly reconcentrated and is returned to U.S.I. for further fortification and for sale, principally to fertilizer manufacturers. Acid production is 140,000 tons per year.

Not all of the ethylene produced from cracking ethane will be used for alcohol manufacture. Some will serve as raw material for the production of 50 million pounds of ethyl chloride a year. This organic chemical is a basic raw material for the manufacture of tetraethyl lead for high octane gas. Other by-products of the overall process are propane, butanes, and natural gasoline (from the fractionation plant) and ethyl ether (from the alcohol plant).

Further expansion is planned for 1955, when a polyethylene plant is to be completed. Initial output is expected to be about 25 million pounds a year, with additional expansion the following two or three years.

Propane Underground

An unusual feature of the hydrocarbon plant is the storage of 6.3 million gallons of propane underground in limestone caverns—at a capital expenditure only one-third that of surface storage. A tunnel 400 feet long and 330 feet under the earth's surface was drilled, and at right angles to the tunnel, five parallel 450-foot horizontal shafts were mined. These storage facilities are believed to be the second largest of their kind in the world.

National Distillers Products Corporation, of which U.S.I. is a division, manages and operates the National Petro-Chemicals Corporation plant. The new corporation is owned 60% by National Distillers and 40% by the Panhandle Eastern Pipeline Company.

New Booklet on Methionine For Supplementing Feeds

A round-up of current information on methionine as a poultry, swine, dog and mink feed supplement has been published and is available from U.S.I. on request. Entitled "What Methionine Can Do for You", it is a compilation of articles by leading research and technical specialists. Methionine's value as a feed supplement, possible new uses for methionine, and pointers for feed manufacturers on how to supplement their feeds with methionine are among the subjects discussed by the various authors. A pioneer producer of DL-methionine, U.S.I. has stocks located strategically throughout the U.S.A. for the convenience of the feed trade.

Magnesium Possible Fuel For Engines of Future

Magnesium-fueled engines are a possibility when petroleum supplies are exhausted. Powdered magnesium, 2 to 6 microns in diameter, could be an important fuel of the future, according to an authority in the field. Some 300 pounds of powdered mangesium can develop horsepower equivalent to 3,000 gallons of aviation gasoline. Although changes in engine design would be necessary, they would result in fewer working parts.

Reports on New Lubricants

Two research reports reviewing characteristics of new lubricating materials are now available. One describes how turpentine, combined with other ingredients, can be made to form synthetic lubricants, oils and greases for use in low-temperature areas. The second research report is on the frictional behavior of polyethylene, polytetrafluoroethylene, and halogenated derivatives.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

A coloring material compatible with all types of paint products — oil, rubber, alkyd, or varnish based — reportedly has been developed. Eighteen light shades are offered, with darker tones being added to the line. **(No. 1000)**

To measure specific gravity of flowing material without contact, a system has been devised where nothing but radiation enters the pipe. It is described as useful with flowables of specific gravities from 0.5 to 2.75. **(No. 1001)**

For quantitative analysis of several metals from the same solution, a controlled-potential electroanalyzer is being introduced. It should speed up routine analyses of alloys and other samples with more than one metal and should be useful to researchers. **(No. 1002)**

A new cooling tower with fewer construction parts is claimed to simplify erection and maintenance and to give better performance through a bracing system that provides minimum obstruction to the free flow of air. **(No. 1003)**

A flexible tubing resistant to most inorganic acids and alkalis and many organics is available with inside diameters ranging from 0.12" to 1". It is described as ideal for any temporary or permanent fluid lines where easy-to-handle, sturdy tubing is needed. **(No. 1004)**

A filter for fuming nitric acid and other corrosives has been announced. Industrial tests indicate that the new filter medium is completely resistant to all common acids and gases. **(No. 1005)**

A new gasoline additive which is said to prevent preignition and spark plug fouling was recently announced. The knocking which results from preignition reportedly is reduced. **(No. 1006)**

An alkali-resistant, synthetic filter aid offering porosity and combustibility is being introduced. The new product is a free flowing grade of carbon that is said to provide the same porosity and permeability offered by diatomaceous earth. **(No. 1007)**

Ordinary cotton cloth won't flame at 4500°F. after treatment with an agent which retains its resistance even after repeated laundering, it is reported. Besides industrial use, the specialty shows promise for draperies, mattress covers and other home furnishings. **(No. 1008)**

A new diuretic is said to offer health gains for patients suffering from edema resulting from congestive heart failure. A nonmercurial compound unrelated to any existing diuretics, it is administered orally. **(No. 1009)**

PRODUCTS OF U.S.I.

ALCOHOLS
Amyl Alcohol (Isoamyl Alcohol)
Butanol (Normal-Butyl Alcohol)
Fusel Oil — Refined
Propanol (Normal-Propyl Alcohol)

Ethanol (Ethyl Alcohol)
Specially Denatured—all regular and anhydrous formulas
Completely Denatured—all regular and anhydrous formulas
Pure—190 proof U.S.P., Absolute—200 Proof
Solox*—proprietary solvent—regular and anhydrous

ANTI-FREEZE
Super Pyro* Anti-Freeze
U.S.I. Permanent Anti-Freeze

ETHERS
Ethyl Ether, U.S.P.
Ethyl Ether, Absolute—A.C.S.

ACETONE—A.C.S.

ANSOLS
Ansol* M
Ansol* PR

ACETIC ESTERS
Amyl Acetate—Commercial and High Test
Butyl Acetate
Ethyl Acetate—all grades
Normal-Propyl Acetate

OXALIC ESTERS
Dibutyl Oxalate
Diethyl Oxalate

PHTHALIC ESTERS
Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate

OTHER ESTERS
Diatol*
Diethyl Carbonate
Ethyl Chloroformate

RESINS (Synthetic and Natural)
Arochem*—modified types
Arodure*—urea-formaldehyde resins
Arofene*—pure phenolics
Aroflat*—for special flat finishes
Aroflint*—room temperature curing phenolic
Aroplaz*—alkyds and allied materials
Aropol*—copolymer modified alkyds
Ester Gums—all types
Natural Resins—all standard grades

INSECTICIDE MATERIALS
Allethrin
CPR Concentrates: Liquid & Dust
Piperonyl Butoxide
Piperonyl Cyclonene
Pyrenone* Concentrates: Liquid & Dust
Pyrethrum Products: Liquid and Dust
Rotenone Products: Liquid and Dust

INSECTIFUGE MATERIALS
Indalone*
Triple-Mix Repellents

INTERMEDIATES
Acetoacetanilide
Acetoacet-ortho-chloroanilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloroanilide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

FEED PRODUCTS
Calcium Pantothenate (Feed Grade)
Choline Chloride
Curbay B-G* 80
DL-Methionine (Feed Grade)
Niacin, U.S.P.
Riboflavin Concentrates
Special Liquid Curbay*
U.S.I. Vitamin B_{12} and Antibiotic Feed Supplements
Vacatone* 40

OTHER PRODUCTS
Acetaldehyde
Caustic Soda
Ethylene
IPC (Isopropyl-N-Phenyl Carbamate)
CIPC
Liquid Chlorine
Metallic Sodium
Methionine (Pharm.)
N-Acetyl DL-Methionine
Nitrocellulose Solns.
Propionaldehyde
Propionic Acid
Sulfuric Acid
Urethan, U.S.P.

*Reg. U.S. Pat. Off.

U.S.I INDUSTRIAL CHEMICALS CO.
Division of National Distillers Products Corporation

120 BROADWAY, NEW YORK 5, N. Y. BRANCHES IN ALL PRINCIPAL CITIES

Hyland Completes Move

Hyland Laboratories completed the move to its fully remodeled plant at 4501 Colorado Boulevard, Los Angeles 39, on December 4, according to G. Preston Snow, president. The new one-story building, occupying 88,000 square feet, replaces four former locations and coordinates all production, research, packaging, shipping, warehousing and management functions under one roof. A blood fractionation division has been added to the facilities.

In addition to its established line of blood plasma, immune serums, blood diagnostic reagents and other specialties, the company will shortly add gamma globulin and other fractionated products.

New home of Hyland Laboratories, located at 4501 Colorado Boulevard, Los Angeles. Company will soon add fractionated products to its established line of blood plasma, immune serums, blood diagnostic reagents and other specialties.

Gellert, Vicks Prod. Mgr.

Edward B. Gellert has been appointed product manager for Vicks Medicating Cough Syrup, according to Kirby Peake, general manager of Vick Products division, Vick Chemical Co. He has been with the company since 1948.

EDWARD B. GELLERT

Cyanamid Division Changes

Kenneth H. Klipstein has been appointed general manager of the newly created research division of American Cyanamid Co., according to K. C. Towe, president. This division will be responsible for the operation of the Stamford Research Laboratories under the direction of Dr. J. T. Thurston and will supervise other research and development programs not under the responsibility of operating divisions.

L. C. Duncan has become general manager of a new division known as the organic chemicals division, and V. E. Atkins, assistant general manager. This unit will merge and consolidate the activities of the petrochemicals division with those of the Calco division.

A. B. Clow has been named general manager, and A. R. Loosli, assistant general manager, of the new fine chemicals division which will operate the Princeton, N. J., plant (recently purchased from Heyden Chemical Co.) and will handle domestic sales of bulk antibiotics, bulk pharmaceuticals including those heretofore produced and sold by Calco, and the animal feed products formerly handled by the Lederle Laboratories division.

J. Allegaert has become general manager, and A. B. Hettrick, assistant general manager, of the new pigments division, which will be responsible for the production and sale of titanium dioxide and other pigments formerly handled by Calco.

These changes, according to Mr. Towe, make it possible for S. C. Moody and Dr. R. C. Swain, vice-presidents, to devote all their time to general staff matters and assist in the determination of company policy.

Left to right: Lawrence Alexander and Harry Hildebidle, advertising manager and sales manager, respectively, of Windsor Chemical Labs., receiving plaque from Dr. Edmond G. Young, Kinetic Chemical Div., E. I. du Pont de Nemour, for "Tropic Air" household room deodorizer.

Stock Heads Bd. of Trade

Frederick J. Stock, vice-president, commercial development division, Mathieson Chemical Corp., was elected president of the New York Board of Trade at a special luncheon meeting of the directors on December 10 at the India House. He succeeds James P. Fordyce, chairman of the board of the Manhattan Life Insurance Co., who has become chairman of the board.

Karl Voss

Karl Voss, founder and president of the Karl Voss Corp., died January 1 in Roosevelt Hospital, New York, after a long illness. He spent his life in the paper-box business, having founded his own company which was affiliated with Shoup-Owens Inc. and became a wholly owned subsidiary of that company. Mr. Voss was active in the trade for many years, having served on the convention committee of the Toilet Goods Association over a long period of time. He had been chairman of that committee for a number of years.

He is survived by his widow; a son, Donald H.; a brother, Richard; and two sisters, Mrs. Henry L. Goodwin and Mrs. Theodore Bremer.

Fragrance is the Signature of your product!

FLOWER OIL *White Lilac*

The *perfect* Lilac for toilet waters, perfumes, lipsticks or other cosmetic preparations. As produced by Verona — White Lilac captures and *holds* for your product all the delicate, springtime fragrance of the fresh-picked flower itself.

This is one of the many outstanding Verona fragrances that is helping market leaders on their road to success.

Here are a few others — try them in your present oils, and note the marked improvement:

- **ALDINE VERONA** . . With only ½ to ¾% you'll hit an exciting new aldehydic topnote.
- **RESEDALIA** . . . . . To make your Lily and Lilac scents come thrillingly alive . . . add ½ to ¾%.
- **CYCLAMAL** . . . . . Add up to 5% . . . for a cleaner, crisper impact.
- **CUMIN KETONE** . . See how only ¼ to ½% added to your present floral fragrance heightens and freshens the effect.

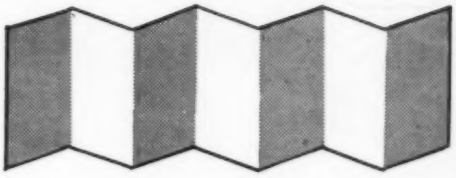
Sole Representatives in the U. S. for J. and E. SOZIO, Grasse, France
Natural Absolutes • Resinoides • Essential Oils

USE VERONA PRODUCTS TO BUILD SALES FOR *Your* PRODUCTS

AROMATICS DIVISION
VERONA CHEMICAL COMPANY

26 Verona Avenue, Newark, N. J. — 208 North Wells Street, Chicago, Ill.

Trade Literature



Ethyl Alcohol Sheet

Commercial Solvents Corporation, 260 Madison Ave., New York 16, has issued Technical Data Sheet No. 21 giving complete information on ethyl alcohol.

Stokes Freeze-Drying

F. J. Stokes Machine Company, 5500 Tabor Road, Philadelphia 20, has issued Catalog No. 735, which is a 24-page brochure on Freeze-Drying in Industry. The booklet is a compendium of the principles, methods, and benefits of the freeze-drying process, and many typical problems solved by freeze-drying are described in detail.

Heyden Booklet

Heyden Chemical Corporation, 342 Madison Ave., New York, has a 24-page booklet giving a review of pharmacological literature and a description of the properties of Salicylamide.

Heyden has also issued a technical bulletin on new uses of trimethylolethane (TME), a solid trihydric alcohol as a raw material in the manufacture of alkyds, high-grade drying oils, plasticizers, surface active materials and fine chemicals.

Sequestering Agents

Refined Products, Lyndhurst, New Jersey, has a 22-page booklet on Perma Kleer Stable Sequestering Agents. The company says that the booklet "shows in detail their superior sequestering power over all other sequestering agents in either acid or alkali pH of iron, calcium and other metal salts."

Emulsions

Atlas Powder Company, Wilmington 99, Del., has issued a 78 page booklet on Industrial Emulsions with Atlas Surfactants. For this industry and other industries there is much valuable information to be found in this booklet.

Sodium Dispersions

U. S. Industrial Chemical Co., 120 Broadway, New York 5, has issued a 30-page booklet on sodium dispersions, their properties, preparation and industrial application. It is offered as the first step in acquainting those interested with all the information which has been assembled on the subject. It reviews developments over the past three years, and enlarges upon the first technical bulletin issued by the company in 1950.

Day Roller Mills

A complete, detailed instruction book entitled Installation, Operation and Care of Day Roller Mills, is now available from J. H. Day Company, Cincinnati, Ohio.

Ion Exchange

Rohm & Haas Co., Resinous Products Division, Washington Square, Philadelphia 5, has issued a new illustrated booklet entitled Amberlite Ion Exchange. The bulletin is described as getting back to fundamentals and answering the questions, "What is ion exchange?" and "How and where is it serving industry?"

Fundamental ion exchange processes are described with the aid of a full page of two-color drawings. There is given much information to enable one to fully understand ion exchange.

The Kimble Story

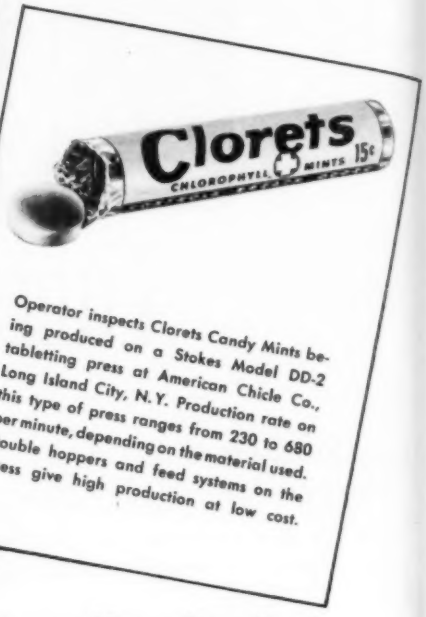
Kimble Glass Company, Toledo 1, Ohio, has issued a beautiful and interesting booklet entitled "The Kimble Story." The booklet describes the products of the company and their quality principally through reproductions of Kimble advertisements. Harlan Hobbs, of Kimble points out these unusual advertisements were gotten together by a team which in addition to Mr. Hobbs, included William Perry, Jack Hamilton, Peter Denardo, and Jack Morse of the New York office of the J. Walter Thompson Company.

Ethanolamines

Carbide & Carbon Chemicals Company, 30 East 42 St., New York 17, has issued a technical bulletin on phenyl ethanolamine, phenyl diethanolamine, phenyl methyl ethanolamine, and phenyl ethyl ethanolamine.

Kay-Fries Bulletin

Kay Fries Chemicals, 180 Madison Ave., New York 16, has issued a Technical Data Bulletin on Dichloroacetic Acid and Dichloroacetyl Chloride, giving suggested applications and a resume of past experimental work.



Operator inspects Clorets Candy Mints being produced on a Stokes Model DD-2 tabletting press at American Chicle Co., Long Island City, N.Y. Production rate on this type of press ranges from 230 to 680 per minute, depending on the material used. Double hoppers and feed systems on the press give high production at low cost.

How Stokes Helped to Create a New Product

American Chicle Company, Long Island City, New York, one of the world's leading manufacturers of gums and candy mints, called upon Stokes Advisory Service to assist in the development of a new candy mint containing chlorophyll. Formulations were devised in cooperation with the American Chicle Co. laboratories . . . product tests conducted . . . supplies for market testing worked out with Stokes analysts . . . all of which led to a new product, Clorets Candy Mints, designed to keep breath "Kissing Sweet."

All equipment used in the manufacture of Clorets Candy Mints — for mixing, granulating, drying, and tabletting — is Stokes equipment. Every Clorets Mint turned out on the four Stokes Model DD-2 tabletting presses at American Chicle Co. meets the rigid quality control standards which this firm maintains. In addition to Clorets Candy Mints, the American Chicle Company also produces Chiclets, Dentyne, Beeman's, and Clorets Chewing Gums.

Stokes single-punch or rotary tabletting presses are adaptable to large or small production. A minimum of labor and servicing is required to operate these presses at maximum efficiency.

Send for Catalog No. 800, "Stokes Tabletting Presses", which pictures and describes tabletting processes, and for Catalog No. 600, "Stokes Pharmaceutical Equipment", which describes the complete line of Stokes pharmaceutical machinery now available.

F. J. STOKES MACHINE COMPANY
PHILADELPHIA 20, PA.

STOKES

STOKES MAKES: High Vacuum Equipment, Vacuum Pumps and Gages/Industrial Tabletting, Powder Metal and Plastics Molding Presses/Pharmaceutical Equipment

Management Forum

by Francis Chilson
INDUSTRIAL CONSULTANT

Family Companies

It is my belief that a legal limit should be placed upon the size of privately owned or family corporations. When this legal limit has been reached, such corporations should be required to make available for sale to key employees or to the public, a substantial portion of their capital stock, at a fair price. When they fail to do this such corporations should be subject to special taxes that would limit or prevent their further growth.

Privately owned corporations receive as many benefits from the public as public corporations do, but in the latter instance, the public through stock ownership, participates in the profits of public corporations. And, what is even more important, such a plan would prevent the growth of tremendous economic power under the control of a few individuals.

The free enterprise system can only be maintained as long as it continues to provide liberal rewards for enterpreneurs who have the vision, the ability and the guts to establish business enterprises. But anyone who has built a business to a volume of several million dollars per year has already been liberally rewarded and he should morally, if not by compulsion, make it possible for those who have helped him build the business to share in its ownership and in the rewards that further development of the business will bring. No man in the history of the world ever singlehandedly built a substantial business. He had to have the support and assistance of associates. No man, however brilliant, can go it alone and he should not be rewarded as if he had gone it alone. Some of you, especially those who participate in family owned corporations, will say that through the income tax, the Government forces the owners of family owned corporations to share their rewards with the public. This is true, of course, in a very general sense but it is a common burden that everybody shares, each according to his means, and it is my opinion that before compulsory sharing of profits through taxation, there should be private sharing through stock ownership among the people outside the family without whose cooperation the business could not have succeeded. It's all very well for the owner of a business to say that he didn't need his present group of key people to succeed, and that if he hadn't had the present group he would have had some other group. But that's begging the issue. The fact is he had to have *somebody* and that somebody should be permitted to participate in the ownership of the company. I don't mean necessarily that key executives should be given stock but I think they should be allowed to buy it in substantial amounts in accord with their means.

When, by virtue of the times and the rapid economic growth of the country, family corporations are permitted to grow to great size, we have seen how families evade inheritance taxes and income taxes as well, by establishing non-profit foundations to take over their equities in the companies they control. The net effect of these foundations in so far as the families establishing them are concerned, is to preserve their wealth intact while maintaining to the full their economic power. The foundations control their enterprises and the families control the foundations.

But I am less concerned with the multi-million dollar family corporations than I am with the smaller ones of which we have a great number within our own industry. I have observed in the course of my experience that when one works for the founder of a business it can be rewarding, interesting and very stimulating. Sometimes this happy condition carries over into the second generation under the aegis of the founder's son, once in a while, though not very often, is more able and more fair-minded than the founder himself. But difficulties begin to arise when by virtue only of their economic power several sons come into the business. It is a truism that ability is not hereditary and it almost never is apportioned equally among the sons of an able man. But when the sons-in-law and the nephews and the cousins come into the business the resulting condition is not only unfair to the people who helped build the

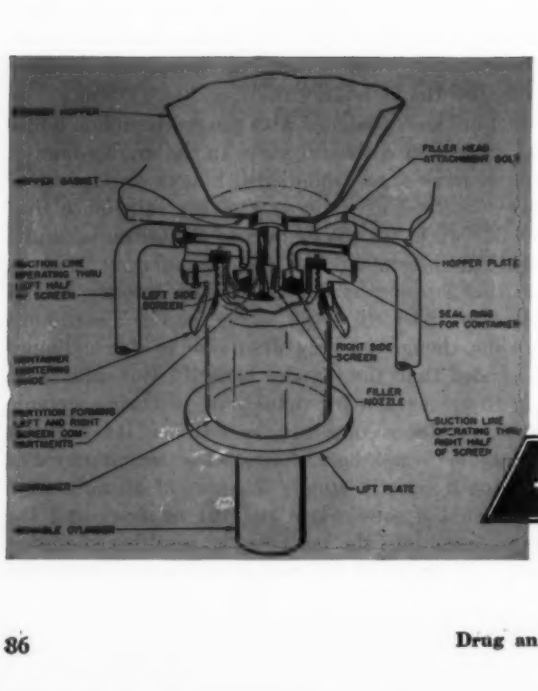
CLEAR THE AIR

with

VACUFLOW

Dustless POWDER FILLERS

Cut Product Wastage
Obtain Accurate Uniform Fill
Cut Cleaning Costs



Pneumatic, a leading manufacturer in the packaging field since 1895, now offers a complete line of powder filling equipment — machines operating on a new principle of vacuum feeding, instead of pressure to pack the powder into its container.

Here's how Vacuflow works: Air is removed from the container to create a vacuum, which draws a measured quantity of powder from the hopper. Uniform fill is assured by regulating the powder's density with a predetermined degree of vacuum. This unique method eliminates dust because it simply does not involve air currents that *cause* dust.

Units are available to handle every powder filling requirement. This includes semi-automatic models for filling containers ranging from a tiny powder box up to 200 pound drums and multiple head rotary models for automatic handling of 5 pound sizes or less, at speeds of 45 to 300 per minute. Pneumatic invites your inquiry.

PNEUMATIC SCALE CORP., LTD., 70 Newport Avenue, Quincy 71, Massachusetts. Branch Offices in New York; Chicago; San Francisco; Los Angeles; Seattle.

PNEUMATIC
LOWER COST PER CONTAINER

PACKAGING AND BOTTLING MACHINERY

business; it actually is immoral (mind you, I haven't yet said anything about the fraternity brothers!).

The principal difficulty, common to all family owned corporations, is that the attitude of the top management is always subjective and not objective as it should be, and as it is in publicly owned corporations where the top management arrives by a process of selection. When you criticize the decision or the action of any member of a family group you, by subjective interpretation, also are criticizing the person, and the chances are better than ten to one that his act will be defended by the remainder of the family group and your criticism will be considered as an affront to the entire family. Wherever proposals that require the expenditure and investment of money are discussed with the family group, you will find invariably that each member of the family group feels that you are spending *his* personal money. They simply cannot be objective. Very often the actions of that part of the family, which participates in the management of the business, are controlled or inhibited by other members of the family who don't participate in the business excepting possibly as directors; who don't know anything about the business; and who don't give a damn about it. All they want is more dividends. I once sat at a board meeting discussing a new factory project, when a cousin of the president remarked with some asperity, that if the company had two million dollars to invest in a new factory she couldn't understand why the stockholders hadn't had much larger dividends with all that money lying around. She also reminded the president, poor guy, that when his father was alive they always used to get more dividends. That of course was before the corporation tax and the excess profits tax became so high.

"Blood is thicker than water," they say and I am becoming convinced that this is the only reason why the presidents of some family owned corporations aren't eager to spread the stock ownership among a considerable number of outsiders. Directors' meetings among family groups can not only be highly acrimonious but they can be personal to a degree that no outsider would tolerate. The president of one such corporation told me recently that his sister had called up and demanded a job for her son who had just graduated from college. When she was told that her son would have to start learning the business in the factory she wanted to know where the factory was located. (Mind you, she is a very substantial stockholder in the business, yet she hadn't the foggiest notion where the plant was.) When she learned that her son would have to commute for a couple of hours a day from his home to the factory she told her brother that it was utterly stupid to have the factory in such an out of the way place, and why didn't he move the factory closer to New York so that her son wouldn't have so far to commute! I could cite dozens if not hundreds of similar reactions on the part of family members who were lucky enough to have inherited substantial interests in businesses to which they never had, never will and never can contribute anything. But by virtue of ownership they can obstruct a lot. They can and very often do, indeed, eventually destroy the business altogether.

There are right now in the drug and cosmetic industry a number of family owned firms that are slowly dying because the families owning them are milking the businesses and throttling progress. I know of two cases where the presidents, having made their pile, refuse to do anything whatsoever to sustain their businesses for the benefit of those who helped to build them up. I asked one of these men, whom I have known for a good many years, why he didn't sell out and let somebody run the business who knew something about it. He told me bluntly that it was his business and he would do with it as he damned well pleased. If that is moral I don't know what morality is. But it is an attitude of mind very often encountered among family owned corporations. When you consider in this particular instance that three of the top men have been with the corporation for more than thirty years and would be unemployable if anything happened to it, the question of morality of the president's attitude is clearly emphasized. Such an attitude would be impossible if the tax law doubled the rate on all corporations over a given size in which 50 per cent of the stock is held by one individual or a group of individuals related by blood.

Nepotism

One of the most hopeful indications of the health and stability of the free enterprise system was the action taken recently by the State of New York in forcing the resignation of Thomas I. Parkinson, Chairman of the Board of the Equitable Life Assurance Society of the United States, for the economic crime of nepotism. Mr. Parkinson, according to the State Superintendent of Insurance, had been using the power of his office to get profitable jobs and contracts for his relatives. Therefore the State stepped in and tossed him out on his ear and, presumably, his relatives with him. Don't you wish to God that this could happen in every corporation, whether public or private?

I know of many corporations, both public and private, that are loaded with incompetent relatives, in-laws and fraternity brothers. I have been witness to many cases where a corporation president injected his son into the business, and in a very short time gave him a major management job (and a major salary), even though the president owned less than 10 per cent of the stock of the corporation, and in spite of the fact that, in some instances, the son was as dumb as hell.

The regulations of the Securities Exchange Commission and the laws of the various states and of the Federal Government should be revised in a manner that would make nepotism impossible. When this is done I firmly believe that the capitalist system will forever remain impervious to the attacks of the Communists. I say this sincerely. even though I am aware that in certain few exceptional circumstances where

really capable sons and relatives were employed, I have found it easier with their cooperation to sell programs calling for the expenditure of substantial sums of money to the ultimate power, namely, the Boss.

Paper Work

I have been preaching about the alarming growth of paper work in every part of every company in the industry. I would like you, therefore, to clip the following quotation from Marshal Montgomery which I culled from a recent issue of Time Magazine, and paste it on everybody's desk in your employ. Referring to NATO Montgomery complains:

"*The amount of paper in circulation is simply terrific. It is not possible for any sane man to read more than half of it. And the other half isn't worth reading.*"

Over-Efficiency

I was very much pleased when J. D. Douglas, of the Detroit Edison Company, made an all-out attack on "over-efficiency" at a recent A.M.A. office management conference in New York. Mr. Douglas said that his company often had reduced clerical costs by providing numerous breaks such as stopping to search for papers and records. Such breaks make the job less repetitious and less mechanical. I am very much in favor of this sort of thing. I have seen operations in factories where jobs have been time-studied to a point where every false motion was eliminated and everybody was working at maximum speed like a bunch of robots. In some cases you could see the tension in the workers' expressions and you could actually feel it in the atmosphere. I have always held to the view—and have proven it in practice many times—that the object of good industrial management is to provide the conditions under which the worker can achieve the maximum output with the minimum physical and mental effort. This means providing maximum comfort conditions and eliminating disorder, dust, noise and tension. Exceptionally good lighting and color environment are of maximum importance.

The most striking example I can cite is the case of a manufacturer who, in the United States and Canada, operates four plants all making the same products and using substantially the same equipment. One of the plants, which I had a hand in designing (that's a plug!), has year after year without exception produced at very substantially lower cost than any of the other plants. In this plant everything was done to make the work easy and the surroundings attractive and comfortable. In an effort to determine why it was that the new plant could so consistently have fewer machinery breakdowns, the maintenance crew of one of the old plants was transferred to the new one and the crew from the new plant was put into one of the old ones. The result was exactly the same. The answer is simple: People who are working in a comfortable attractive atmosphere, with facilities that do not impose a nervous strain on them are more interested in their jobs and very much more alert. Consequently they detect irregularities that might cause work stoppages before the stoppages occur. In plants where such conditions do not prevail the worker is not alert, and even if he does detect irregularities he is apt to say "To hell with it!" and regard the breakdown as an opportunity to get a little bit of relief.

Secrecy

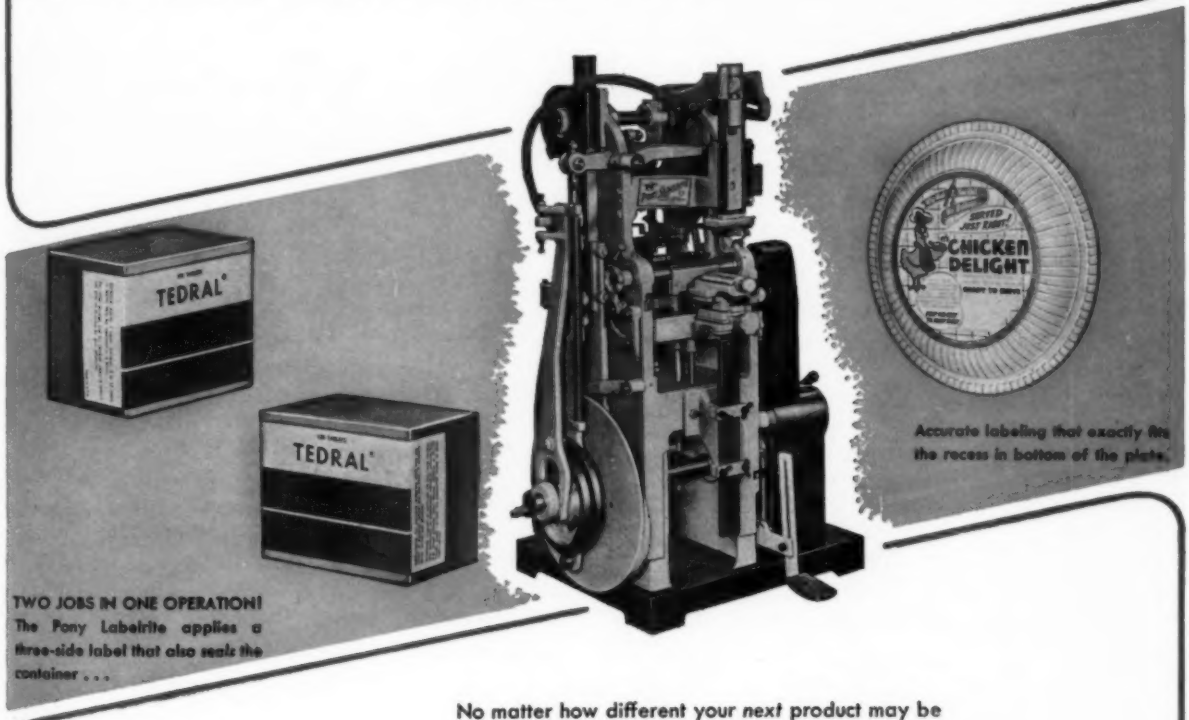
It has been a long time since I have harped on the silliness of secrecy. There was a time years ago when every drug and cosmetic plant was a holy-of-holies. Most people were suspicious of each other and it was believed that if one allowed a competitor into one's plant, the competitor would gain some kind of dangerous advantage. Over the years this attitude seemed to diminish and I had hoped it had vanished altogether. But I was wrong. I got hold of a letter the other day from Allen S. Snyder, of the Cherry-Burrell Corporation, 427 West Randolph Street, Chicago, describing his company's new Super Homo Homogenizer, which has been sold to a number of drug and cosmetic firms. Mr. Snyder expresses the opinion that there are undoubtedly many applications for this homogenizer in the drug and cosmetic industry but he says "the manufacturers we have contacted seem to be desirous of keeping its use a secret." Isn't that the damnedest! How can anybody be so dumb? I suppose each manufacturer who bought one feels he has the edge on his competitors and that the manufacturer of the equipment, having made one sale, will sit by and not try to make another sale in this industry. This reminds me of an experience I had twenty years ago when a new client swore me to secrecy because he had discovered a new type of machine for filling creams and ointments. I told him I didn't make a practice of peddling secrets but that if he had something original he could depend on me to keep his secret. When I saw the equipment I started to laugh because I had seen the same equipment in at least fifteen other plants. My client, because of his insistence on secrecy, was actually about ten years behind his competitors.

New Brochure

A new 4-page brochure has been issued by Adolph Gottscho, Inc., Hillside 5, N. J. maker of package codedating and imprinting machines. The brochure describes the complete line of Gottscho machines, from the manually-operated Rolamarker to the fully-automatic Markoprinter which prints complete display copy in one or two colors on up to five sides of cases as part of the packaging sequence. Photographs show the twenty machines in actual operation on production lines, as well as products and packages from A (aspirin) to Z (zippers) bearing typical imprints that demonstrate the versatility of the Gottscho machines. The brochure is available free on request to Adolph Gottscho, Inc., Hillside 5, New Jersey.

The ONE LABELER that handles all containers!

Time and again this versatile labeling machine solves problems that baffle others. Registers precisely on panels, in recesses, and on curves . . .



TWO JOBS IN ONE OPERATION! The Pony Labelrite applies a three-side label that also seals the container . . .

Accurate labeling that exactly fits the recess in bottom of the plate.

No matter how different your *next* product may be in shape or style of label, the production man, as well as the Sales department *knows* it can be handled on the equipment you already have . . . if its

the PONY LABELRITE®

Ask to see the Movies!

436

NEW JERSEY MACHINE Corporation

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COLTON COATING EQUIPMENT
AT
STANDARD PHARMACAL

Colton was specified because of outstanding engineering and performance features:
RUGGED CONSTRUCTION—the double pillow block shaft bearing allows a larger pan to be used.
DIRECT DRIVE GEAR HEAD—no chains no belts, no slippage, no breakage.
DUSTPROOF DESIGN—mechanism completely enclosed, running in oil, to protect it from coating from dust.
WELDED STEEL BASE—for permanent rigidity and alignment and resulting accuracy of operation and freedom from vibration.
FAST AMORTIZATION—high production delivers savings which pay entire cost of Colton machines in a few months.

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DIVISION SNYDER TOOL & ENGINEERING COMPANY
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Export Office—19 E. 49th St., New York City
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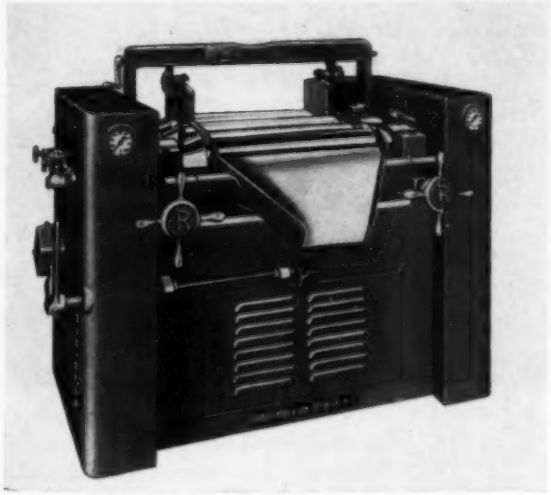
Specialists in Pharmaceutical and Packaging Machinery for Nearly 70 Years

The following information is supplied by manufacturers of the equipment described and claims made below by these manufacturers are passed along for what they are worth. Presentation of such notice in this department is not to be taken as endorsement of the claims or of the equipment.

New Ross Mill

The new No. 52TF Three Roll Mills recently developed by Charles Ross & Son Co., 148 Classon Ave., Brooklyn 5, N. Y., offer greater ease in properly setting rolls, and less skill or experience is required by the operator of this type Mill. The Mills give greater production, and settings on special pressure gauges can be recorded for perfectly reproducing the same material on repetitive runs. The operator has merely to turn two handwheels until required pressure reading shows on the gauges, and the rolls are automatically set in parallel adjustment for giving uniform dispersion across entire face of rolls. Uneven wear on rolls is prevented and maintenance costs are thereby reduced.



No. 52TF Mills feature a complete hydraulic adjustment of rolls for permanent accuracy. There are no intermediate wearable parts to affect gauge efficiency and manual moving of rolls by adjusting screws is eliminated.

To set the Mill to any required roll pressure reading, a very minimum of effort turns handwheels which activate the hydraulic roll adjustment. The gauges are an integral part of the hydraulic adjustment and there are no mechanical adjustments that can wear or result in loss of effectiveness of gauges.

The Mills feature a front adjustment which permits operator to clean down apron or to check delivery roll for proper grind and takeoff, while adjusting the handwheels and gauges at front of Mill.

As handwheels are turned at front, the back roll is moved hydraulically. The front roll is fixed, and middle roll locates itself parallel between the front and back rolls. For cleaning the Mill, the operator merely turns free moving handwheels in opposite direction until gauges record zero pressure and rolls are separated by special high compression springs.

For premixing when desired, between back and middle rolls, there is a quick acting device for disengaging the front roll. When premix is completed, the device is released and middle roll adjusts to front roll for finish grind and takeoff.

No. 52TF Mills are provided with an easily adjustable balanced apron to reduce excessive wear on takeoff knife. Apron is specially designed so constant pressure is maintained on front roll as knife wears. This assures continuous thorough takeoff of material from front roll, and, by preventing dispersed material from cycling back into the Mill, gives uniform maximum production.

According to the manufacturer, the No. 52TF Mills incorporate definite improvements over conventional Roller Mill design, and are available in 4½" x 10", 6" x 14", 9" x 24", 12" x 30", 14" x 32" and 16" x 40" sizes.

Lamson Handling Equipment

For the first time, an integrated materials handling system can be designed and installed in any of the mass packaging industries by a single engineering and manufacturing source.

With the addition of Lamson Mobilift fork trucks to supplement its extensive line of materials handling equipment, Lamson can now offer to industry the first integrated system for handling packaged products from the sealing machine through to the shipping platform into trucks or cars or into storage.

In its integrated system, Lamson designs and installs conveyors for bringing packaged goods from packaging and sealing machines to an automatic pallet loader. This pallet loader, introduced by Lamson Corporation of Syracuse, N. Y., five years ago, automatically stacks boxes or cartons on pallets in predetermined interlocking patterns, and moves the loaded pallet from the pallet loader onto a storage conveyor. At this point, the pallet is picked up by the fork truck and transferred to a warehouse or loaded into waiting transportation.

Besides being able to install a completely integrated system, Lamson is the first conveyor manufacturer to offer a logical choice between conveyors and fork trucks for any application, as well as the proper balance between the two materials handling techniques.

The acquisition of a line of fork lifts is the latest in a series of steps designed to diversify Lamson's product lines and engineering services. Starting in 1880 with a split, hollowed-out croquet ball to carry cash in a small notions store, the idea of materials handling grew at Lamson to include the modern pneumatic tube systems and roller and belt conveyors. In keeping with Lamson's philosophy of rendering ever-widening materials handling services to industry, the company has, over the years, acquired facilities for manufacturing the automatic pallet loader, as well as a separate division for manufacturing blowers for air and gas handling.

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DAY Special Stainless Steel Ro-Ball Sifters at
A. E. Staley, Decatur, Ill., showing only a part of the complete installation.

✻ Extra long life for your equipment is assured by DAY's unmatched ability to combine rugged construction with precision engineering. An impressive list of users have found this true of the DAY Ro-Ball Sifter, which accomplishes 100% elimination of foreign material and ideal aeration. Key to its outstanding performance is the Super-Active Ball Cleaning Device. Scores of rebound points are provided in each compartment, resulting in even vibration over the entire screen surface. The extremely fine mesh stays clean and open, allowing free passage without crushing or forcing.

SUPER-ACTIVE BALL CLEANING DEVICE

Dust-proof Inspection Ports, with cast aluminum rim and cover, are precision-fitted. For complete information on these and many other features — including self-aligning tail end bearings, stabilizing drag link, and stabilizer to prevent rocking—simply call your nearest J. H. Day fi engineer or write us direct for Bulletin.

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PRODUCERS OF QUALITY EQUIPMENT FOR BAKING • PAINT & VARNISH • CHEMI
RUBBER • PHARMACEUTICAL • COSMETICS • PAPER & PULP • EXPLOSIVES • FO
CERAMICS • CANDY • SOAP • SUGAR • MILK PRODUCTS • OTHER MAJOR INDUST

The addition of the fork truck line makes possible an unusual adaptability in the solution of handling and shipping problems in the mass packaging industries.

Lamson Mobilift

Lamson Corporation of Delaware has announced through its President, Carl Dietz, the acquisition, as of November 1, 1953, of the fork lift truck business of Mobilift Corporation, of Portland, Oregon. A new Oregon subsidiary, Lamson Mobilift Corporation will take title to the assets being purchased and carry on this fifteen year old business as an integral part of the Lamson line of materials handling equipment.

By adding a series of fork lift trucks, Lamson, which manufactures an extensive line of belt and roller conveyors, the Automatic Pallet Loader, pneumatic tubes, blowers, and related types of materials handling equipment, has taken a significant step toward becoming the first manufacturer to offer a completely integrated line of materials handling equipment and engineering services.

The Mobilift assets that Lamson acquires include all the equipment, machinery, and inventory at the Company's manufacturing plants at Portland, Oregon and at its five sales, service, and parts branches at Berkeley, California; Dallas, Texas; Chicago, Illinois; Atlanta, Georgia; and Rutherford, New Jersey. The Mobilift nationwide dealer organization and sales force located at national industrial centers throughout the country will be continued.

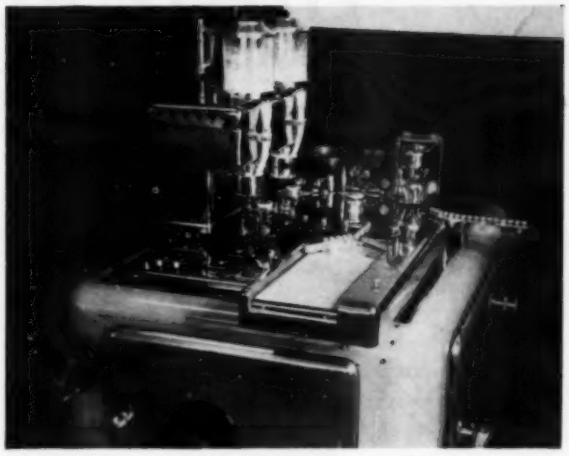
In addition to maintaining Mobilift's present sales, service, and administrative organizations, Lamson Mobilift will further develop its predecessor's policy of increasing the variety and adaptability of the firm's fork lift trucks. A long-range development program will be carried forward whereby the basic series of Mobilift trucks will be expanded to increase the capacity range, and will be fitted with either hydraulic or chain lift mechanisms and pneumatic tires. This expansion program will give Lamson Mobilift a full line of fork lift trucks up to about 4500 pounds capacity.

Foreign Packaging Equipment

Alfred Hofmann & Co., 635 59th Street, West New York, New Jersey, announces that it has added to its sales program a new line of semi-automatic and automatic filling and packing machines, as well as fully automatic cartoning machines, fully automatic check weighing machines and fully automatic stoppering and sealing machines to the present line of Jagenberg labelling and packaging equipment.

These machines are of outstanding modern design and precision, manufactured by Hofliger & Karg in Western Germany. A revolutionary development in automaticity is represented in a fully automatic filling, stoppering and cap sealing machine available for demonstration purposes at the plant of Alfred Hofmann & Co.

Due to its refined engineering and high standards of accuracy and controls, this machine has proven its reliability in continuous production for penicillin vial



filling at several of the well known German and Pharmaceutical concerns, who previously had been using equipment and methods of filling such as are now in use in the United States.

Capable of complete automatic performance of the aforesaid operations there are three sizes of this machine available:

A single head machine, performing at the rate of 30/50 p.m.

A double head machine, performing at the rate of 60/80 p.m.

A three head machine performing at the rate of 100/120 p.m.

Designed for reliable economy in operating expenses and space occupancy, its compact features include provisions for easy maintenance of sterile requirements, as well as means for easy change over in sizes of vials with a minimum of adjustments left to operators' judgment.

The above photograph illustrates the two-head machine.

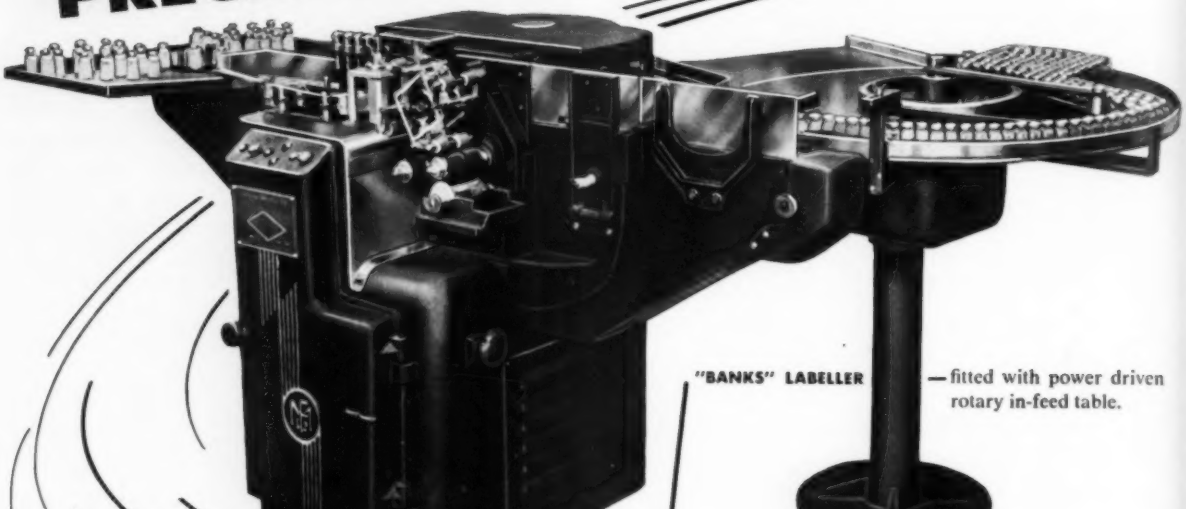
This machine represents a coordination for automaticity purposes of three independent operating units, which are also available as individual machines.

The line of other machines available include well designed automatic cartoning machines, practically every type of precision filling and weighing machines of novel design with an emphasis on precision, manufacture and reliability, with one of the most outstanding features represented in dust free operation.

Alfred Hofmann & Co., themselves manufacturers of automatic machinery for other industries, maintain a fully equipped machine shop, and are technically equipped to provide for service and maintenance of all equipment sold by them in this country. Between World War I and II over forty million dollars of imported machinery was sold by this concern for which substantial stores of replacement and service parts to meet service requirements have been held available.

High production Jagenberg labeling and packaging machines also sold by Alfred Hofmann & Co. have found an open market in the United States due to their advanced design and precision manufacture.

HIGH SPEED PRECISION LABELLING at low cost



"BANKS" LABELLER — fitted with power driven rotary in-feed table.

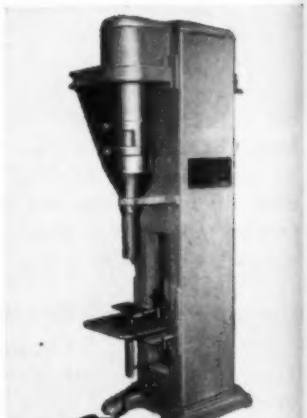
WITH THE "BANKS" LABELLER

Vials, jars and bottles are precision labelled on a "Banks" at the rate of 2,400 to 10,200 per hour. This cost and time-saving volume output is accomplished with accurate label registration—whether front and back, all-round, or spot labelling.

Furthermore, the "Banks" uses no wipers or rollers; labels are protected against smearing, soiling or staining, and there is never any excess glue extending beyond label edge.

Other advantages include an electrical "No Bottle —No Label" device, Variable Speed Range adjustable while machine is running, and convenient accessibility to all parts for easy cleaning.

There is a "Banks" Labeller to fit your individual labelling operation. Write and tell us your requirements, or request illustrated "Banks" Catalog.



UNIVERSAL FILLER. The Universal Filler fills powders, granules, pastes and creams into jars, boxes, envelopes and cans by gross-weight, packing, or volumetric measurement.

STOKES & SMITH CO.

4912 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

Pacific Coast: SIMPLEX PACKAGING MACHINERY, INC., 534 - 23rd AVE., OAKLAND 6, CALIF.

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SUBSIDIARY OF FOOD MACHINERY AND CHEMICAL CORPORATION

TRADE MARK

6-55

Readers' Questions

Liquid Foamy Shampoo: *We would like your advice concerning formulas for the manufacture of liquid foamy shampoo. We would like to have one based on synthetic detergents. Malta.*

The simplest of such products consists of sodium lauryl sulfate type detergent dissolved in water in suitable proportions. Perhaps you prefer a liquid cream shampoo, in which case the following formula should serve your purpose:

Cetyl alcohol	**15 Gm.**
Propylene glycol	**10 Gm.**
Beeswax	**2 Gm.**
Sodium lauryl sulfate	**2 Gm.**
Water, to make	**100 cc.**

Melt the fats and the propylene glycol and bring to 65° C. Dissolve the sodium lauryl sulfate in the water and bring to 65° C. Under rapid agitation add the water to the fats. When emulsification is complete, add fifty more grams of sodium lauryl sulfate dissolved in enough water to bring the total volume to 500 cc.

Foot Deodorant Cream: *Can you suggest a formulation for a foot deodorant cream? Jersey City.*

A greaseless deodorant cream, which also has analgesic properties, is given by Belanger as follows:

Stearic acid	**2**	**oz.**
Water	**3**	**fl. oz.**
Glycerine	**2**	**fl. oz.**
Potassium carbonate	**80**	**gr.**
Methyl salicylate	**1¼**	**fl. oz.**
Boric acid	**3/4**	**oz.**
Benzoic acid	**3/8**	**oz.**

Dissolve the potassium carbonate in one ounce of water. Add the glycerine to the remainder of the water and melt the stearic acid in this mixture. When completely melted slowly add the potassium carbonate solution with constant stirring. A fairly large sized kettle should be used so as to prevent the mixture from frothing over when the potassium carbonate solution is added. When the potassium carbonate solution is all in, remove from the heat and beat until it begins to thicken. Then add the methyl salicylate and sift in the boric and benzoic acid, continuing to mix until it forms a firm cream.

Penicillin Preparations: *Could you assist us in obtaining formulas using penicillin in cold creams and other cosmetic creams? Bloomfield.*

I regret that I have no data on such products. However, penicillin has been used in emulsion type creams for the treatment of various skin conditions and perhaps a product of this sort could be adapted to your needs. However, penicillin-containing products of this nature are generally rather unstable. Incidentally, putting penicillin into any of these products automatically makes it a therapeutic product and liable to all the regulations of such products.

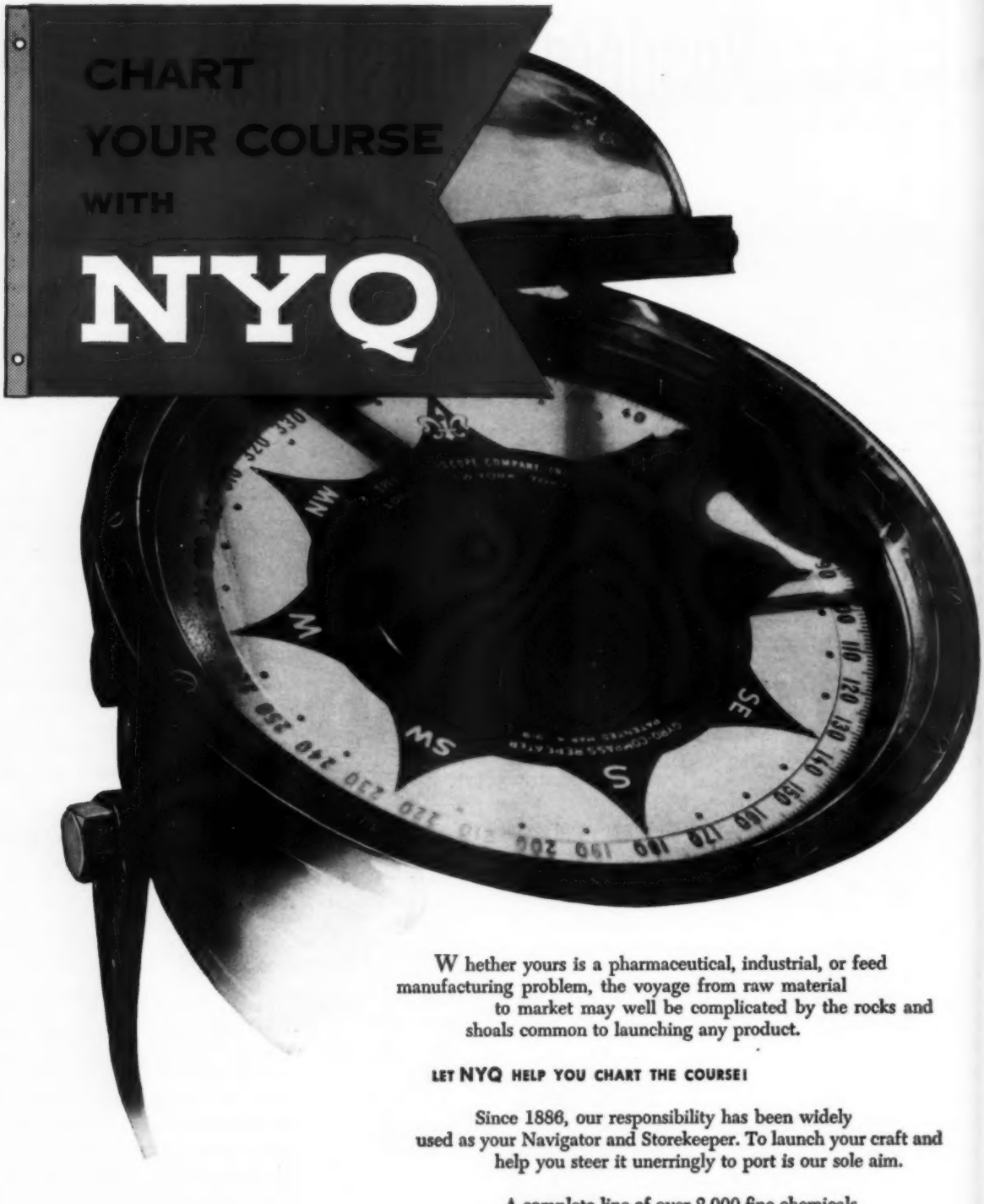
Hand Cleaner: *We should appreciate being informed of a formula or a procedure for making a mechanics-type hand cleaner. Paterson.*

Hand cleaners of this type are a bit out of our line. However, a typical standard formula for such a product calls for the use of:

Soap chips	**100.0**	**parts**
Water	**200.0**	**"**
Pumice or sand	**150.0**	**"**
Sodium silicate	**25.0**	**"**
Glycerine	**10.0**	**"**
Perfume	**5.0**	**"**

Lipstick Cheilitis: *We have recently introduced an indelible type lipstick. We have heard that occasionally there are cases of dermatitis in the form of photosensitivity due to the lipstick dyes. We would like to know more about photosensitivity. We have not been able to find any references to this condition in your publication. We would, therefore, appreciate it if you could advise us on any writer on this particular subject. Auckland.*

As far as I have been able to determine, photo sensitization from lipstick dye is not very common. A rather comprehensive report on lipstick cheilitis, which is a form of dermatitis due to various lipstick ingredients, was published by S. J. Zakon in *Archives of Dermatology and Syphilology*, Vol. 56, page 499, October, 1947.



W hether yours is a pharmaceutical, industrial, or feed manufacturing problem, the voyage from raw material to market may well be complicated by the rocks and shoals common to launching any product.

LET NYQ HELP YOU CHART THE COURSE!

Since 1886, our responsibility has been widely used as your Navigator and Storekeeper. To launch your craft and help you steer it unerringly to port is our sole aim.

A complete line of over 2,000 fine chemicals, together with the experience acquired through sixty-seven years of continued service to America's leading manufacturers, make for good piloting when you let NYQ help chart the course.

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Advancing Therapy

Storage Time for Antibiotics

According to a note in the *Pharmaceutical Journal* (171:342, 1953) an amendment to the Dominion of Canada Food and Drug Regulations provides the periods from the date of manufacture or compounding after which antibiotics and their preparations may not be supplied. The following are examples of the periods specified, the numbers in brackets representing months:—Bacitracin (18); Carbomycin (12); Chloramphenicol (36), ointment (12); Chlortetracycline (24), capsules and tablets (36); Erythromycin (24); Neomycin (18); Oxytetracycline (36), ointment and tablets (24); amorphous penicillin (18), lozenges (9), crystalline penicillin (36), lozenges (24), procaine penicillin and streptomycin sulphate solution (18); Polymyxin (36); Streptomycylidene isonicotinyl hydrazide sulphate (18); Streptomycin (36), streptomycin-polymyxin-bacitracin gauze pads (12).

Hexamethonium in PVP

It is pointed out by E. A. Murphy and John Eastwood (*Lancet* 2:804, 1953) that more than three years' study of the therapeutic use of the methonium compounds in hypertension has provided ample evidence of their value. Most workers prefer to administer the drug subcutaneously but it is necessary to give three injections to maintain the blood pressure within the desired limits throughout the active part of the day. Several methods have been tried to overcome the need for these frequent injections but only solution in polyvinylpyrolidone (PVP) were considered worthy of further trial.

Murphy and Eastwood have therefore investigated the duration of effect on blood pressure of one subcutaneous injection a day of a solution of 20 per cent hexamethonium bromide (w/v) in polyvinylpyrrolidone with 0.5 per cent chlorbutol added as a preservative. They also tried to find whether the size of the dose modifies the effect. No attempt has been made to study the cases over a long period.

It is concluded from the clinical work that hexamethonium in polyvinylpyrrolidone seems to have an effective hypotensive action, which persists for six to 12 hours and in some cases throughout the 24 hours, with a slight tendency to be cumulative. Provided that its effect is constant throughout 12 hours (and this cannot always be achieved), one injection of the preparation given in the morning will suffice, because blood pressure naturally falls at night. Irregularities of action, with the production of postural hypotension, however, lessen its value.

Protoveratrine in Pregnancy Toxemia

Several cases are described by E. Meilman (*J.A.M.A.* 153:540, 1953) that illustrate the usefulness of protoveratrine, a Veratrum alkaloid, for controlling and treating toxemia and eclampsia, as well as essential hypertension during pregnancy. They include 10 cases of severe preeclampsia, six of eclampsia, and one of severe essential hypertension Prompt control of headache, scotomas, epigastric pain, convulsions, and blood pressure elevations was obtained.

It is conceded that the number of cases is too few for statistical significance, but the sequence of events in some of these patients was so contrary to customary experience as to suggest that protoveratrine was an important factor in therapy. There can be little doubt about its effectiveness in releasing arteriolar constriction. This can be readily observed in the optic fundi when the systemic blood pressure is lowered with protoveratrine. The parallel relief of headache and scotomas has led Meilman to concur in the belief that these symptoms result from cerebral vasospasm. It seems likely also that the epigastric pain in toxemia is related to vasospasm, since it, too, is relieved by protoveratrine. The action of this drug, and apparently also of crude and partially purified hypotensive preparations from Veratrum in controlling the premonitory symptoms, the hypertension, and convulsions is very impressive. Control of the vasoconstriction in this disease does not attack the disease at its source, but in this control may lie prevention of many of the serious sequelae. Not intended to replace certain fundamentals of treatment in toxemia, Meilman considers protoveratrine as a valuable adjunct that offers a means of decreasing arteriolar vasospasm and lowering blood pressure to obviate those symptoms and sequelae of the disease referable to the sustained hypertension. Moreover, it affords the obstetrician a prolonged and safe period before instituting necessary obstetric measures.

Cod Liver Oil Preparations in Dermatoses

In a report on the dermatologic value of cod liver oil ointment and cod liver oil lotion, applied in the form of Desitin ointment are Desitin lotion, H. G. Grayzel, C. B. Heimer and R. W. Grayzel (*New York State J. Med.* 53: 2233, 1953) expressed the view that vitamins A ane D are probably involved in skin metabolism. This opinion is based upon the observation that the topical application of cod liver oil ointment and cod liver oil lotion in a series of 351 patients led to a favorable response in 306 cases (87.2 per cent) and to failure in 45 children and adults (12.8 per cent). In a series of 215 patients with contact dermatitis, a beneficial effect was obtained in 208 infants and children. The dermatitis was unchanged in seven infants and children. In 48 cases of stasis dermatitis with or without ulcers and in eight patients with decubitus ulcers, improvement was noted in 34 adults and failures in 20 adults. In 65 patients with subacute or chronic neurodermatitis temporary improvement was observed in 47 cases and failures in 18 patients. In 17 patients with surgical wounds local application of cod liver oil ointment resulted in striking healing and epithelization of the granulation tissues in all cases.

On the basis of these results, Grayzel and his associates conclude that cod liver oil ointment and cod liver oil lotion offer good topical applications for the treatment of a variety of skin disorders and wounds. They are safe, harmless, soothing, and relatively antibacterial and promote healing. They may be used without fear of skin sensitivity and "overtreatment dermatitis."

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Estrogen Cream in Acne Vulgaris

A study was undertaken by H. H. Sawicky, J. L. Danto and W. S. Maddin (*Arch. Dermat. & Syph.* 68:17, 1953) to evaluate the clinical efficacy of topical applications of estrogen-containing cream in the treatment of acne vulgaris. In their study, 26 patients (17 female and 9 male) were treated on one side of the face with approximately 1 Gm. of cream base containing 2.5 mg. of water-soluble conjugated estrogen substance (equine) (Premarin) once daily. To the other side of the face an estrogen-free control cream was applied. Great improvement of the hormone-treated side was noted in three male patients with large cystic lesions. Patients with papular and pustular lesions had moderate, slight, or no discernible improvement on the side treated with the estrogen cream.

Methyl Cellulose in Ophthalmology

In the opinion of R. C. Welsh (*South. Med. J.* 46:819, 1953) methyl cellulose, if used properly, is an excellent viscid agent for combination with ophthalmic solutions of antibiotics, sulfa, and cortisone. It holds most of a drop in the conjunctival sac, even though the patient may blink. When the patient does blink, the solution is caught on the eye lashes, and upon opening the eye, it flows back into the conjunctival sac. Of course, in a short time, tears will dilute the solution, and the excess is gradually expelled.

Welsh suggests that a one per cent solution of the 4,000 cps. type of methyl cellulose may be prepared for mixing with ophthalmic solutions. Thus, this one per cent methyl cellulose solution may be added in equal parts to the commercially prepared 30 per cent sulfacetamide ophthalmic solution. This combination smarts much less than the sulfacetamide solution alone. Clinically, Welsh has found it to be much more effective, particularly in the low grade conjunctivitis cases, and the very severe conjunctivitis cases. The combination smarts much less than the straight commercially prepared 30 per cent sulfacetamide solution. In evaluating several thousand cases in which this combination has been used, there has rarely been an objection to this drop. It leaves an unsightly white precipitation on the lashes, but this may be alleviated by washing them with a wet pad or cloth. The incidence of sensitivity to this combination has been less than 0.1 per cent, and the sensitivity cases were of a mild degree.

A 0.5 per cent solution of the 4000 cps. type of methyl cellulose may also be used with aureomycin, terramycin, neomycin, and chloramphenicol. A 0.5-0.8 per cent solution may be used with cortisone drops.

Massive Doses of Vitamin B_{12}

P. Chevallier (*Sem. des Hopil. de Paris* 29:1953, 1953 through *J.A.M.A.* 153:769, 1953) points out that small doses of vitamin B_{12} may benefit convalescent patients and others whose need for the vitamin is not absolute, but when it is imperatively required, it should be given in massive doses. A single intramuscular injection of 1,000 mcg. of crystalline vitamin B_{12} has been found adequate to maintain a normal blood and marrow picture for from 128 to 358 days in 15 patients with pernicious anemia, indicating that the vitamin can be stored in the body. Similarly large doses have also proved effective in various neurological and rheumatological conditions, such as multiple sclerosis, polyneuritis, and trigeminal neuralgia. Vitamin B_{12} is well tolerated and, like other members of the vitamin B complex, entirely nontoxic, whether given orally or parenterally. Marked improvement and in some cases an apparent cure of progressive pernicious anemia has been secured by the daily administration of 1,000 mcg. When given intramuscularly, injections of 1,000 mcg. every other day are enough to produce satisfactory results in ordinary cases without severe nervous complications. The use of vitamin B_{12} in massive doses is economically advantageous because it shortens the period of hospitalization and frequently results in cure of the patient.

Benzyl Benzoate for Baldness

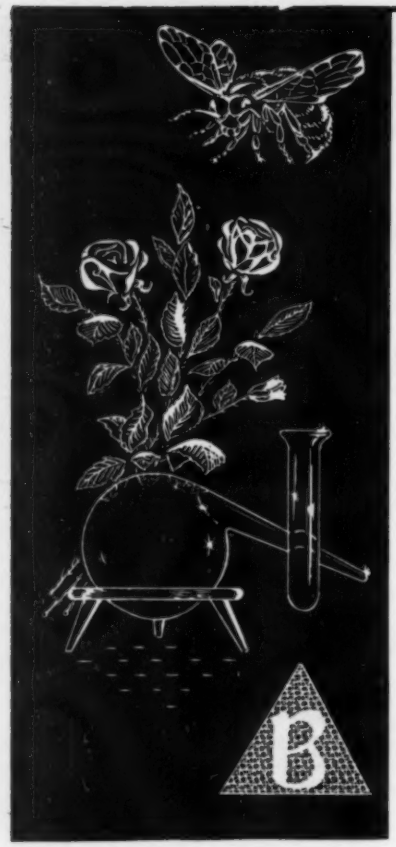
The type of baldness known as alopecia areata can be benefited by the application of benzyl benzoate, according to H. M. Robinson and H. M. Robinson, Jr. (through *Science News Letter* 64:314, 1953). They were using this substance on patients with ringworm of the scalp, during studies to determine its value in this condition. These workers noticed a rapid growth of hair in the bald areas of the ringworm patients who were putting the chemical on their scalps. As a result tests were made on patients with alopecia areata. Of 40 patients followed for a year, 36 got good results with the benzyl benzoate treatments. This chemical proved superior to such other methods as liquefied phenol, ultraviolet light and ointments. It also reduced the need for frequent visits to the dermatologist.

ACTH and Cortisone for Pruritus Ani

R. Turell (*J. A. M. A.* 152:806, 1953) has found that corticotropin (ACTH), cortisone, and hydrocortisone as the sole treatment for severe anogenital pruritus is useful in the management of patients with acute exacerbations of chronic, refractory anogenital pruritus. In these patients it holds in abeyance or reverses the acute pruritic process, thus affording the patient fairly rapid relief and, at the same time, affording the proctologist an opportunity to employ effective and rational measures to control the underlying and precipitating causes of this pernicious type of pruritus. This new method of treatment is equally useful for most patients with chronic intractable anal pruritus. Turell has observed that patients in this group who respond readily to corticotropin or to any of the adrenal corticoids, such as cortisone or hydrocortisone, also respond to tattooing of the involved skin with mercury sulfide for permanent results. In fact, he now employs these hormones as a test preliminary to tattooing; the quick responders appear to be good candidates for this radical therapeutic procedure. Patients with pruritus but with no associated cutaneous changes do not respond to hormonal therapy, and those with "dry," lichenified skin respond erratically. Only hormonal therapy was used in the present study. However, other antipruritic therapeutic measures have been employed concomitantly with this form of hormonal therapy by other clinicians. Since these hormones have a powerful pharmacodynamic effect and since the basic mechanism of their action is still not clarified, they should be employed cautiously.

Of pertinent interest is the study by R. M. Alexander and S. D. Manheim (*J. Investig. Dermat.* 21:223, 1953) in which 29 patients with severe intractable pruritus ani were treated with 2.5 per cent hydrocortisone acetate ointment. Only three patients failed to derive lasting benefit from this treatment.

In the opinion of these investigators the high incidence of benefit from the application of hydrocortisone acetate ointment suggests that this remedy constitutes a valuable aid in the treatment of this otherwise refractory condition.



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Tests for Pyrogens

In a paper presented at the 1953 British Pharmaceutical Conference, J. G. Dare (through *Pharm. J.* 171:334, 1953) pointed out that the British pharmacopoeial and United States pharmacopoeial tests for pyrogens depend on the temperature response of rabbits to intravenous administration of the test material. The methods of interpreting the data differ in the two tests but, in each, the material fails to pass if it produces a temperature rise greater than that prescribed. The maximum response, in both the B.P. and the U.S.P., is a specific temperature rise, which is not related to any comparison with a standard preparation. Therefore, any factor which affects the magnitude of the response (e.g., the degree of restraint imposed on the rabbits, the type of thermometer used, and the frequency of administration of the pyrogen) will affect the sensitivity of the tests. Dare has sought to determine how far the reliability of the tests was affected by failure to take these sources of variation into account and how the relative efficiencies of the two tests compared when conducted under similar conditions.

Using a powdered bacterial pyrogen preparation from *Proteus vulgaris*, it was found that the sensitivity of both tests was maximal (*a*) when the rabbits had not previously been given pyrogen, (b) when the degree of restraint was minimal, and (c) when electrical thermometers were used. It is recommended therefore that in pharmacopoeial descriptions of pyrogen tests, (*a*) the further use of rabbits which have once been used in a test in which pyrogen has been found present be forbidden, (*b*) the maximum degree of restraint which may be imposed on the rabbits be specified, and (c) the use of electrical thermometers should be required.

Of related interest is the work reported by D. M. Tennent and W. H. Ott (*J. Am. Pharm. Assoc.*, Scient. Ed. 42:614, 1953) in which a study has been made of the development of tolerance to bacterial pyrogens in rabbits, which were given a range of pyrogen doses sufficient to cause temperature rises from 0.22 to 2.49° C.

The results of these experiments show that the effect of tolerance in animals which have received pyrogen will not be avoided by the usual three- or four-day rest period between tests, and that a longer time is required. However, if every rabbit must be rested for three or four weeks between tests the size of the colony necessary for control testing will be increased severalfold, and pyrogen assays will become considerably more expensive than they are now.

While this dilemma can be resolved only by further research, Tennent and Ott do have a practical compromise, that appears to give reasonably reliable results. They assign each rabbit an extra day of rest for each 0.1° temperature rise in its last test.

Thus if the previous temperature rise was between 0.8 and 1.4°, the rabbit gets a rest of about two weeks. If it was between 1.5 and 2.1°, the rest is about three weeks.

Evaluating Emulsion Stability

It is pointed out by H. P. Levius and F. G. Drummond (*J. Pharm. & Pharmacol.* 5:743, 1953) that before a new emulsion product can be placed upon the market, stability tests must be made; such tests often requiring storage for long periods with weekly or monthly examinations for deterioration. To remedy this situation these investigators studied methods that would yield quicker means for evaluating emulsion stability. The deterioration of emulsions is indicated by a decrease of the interfacial area, and Levius and Drummond found that they could accelerate the rate of this decrease by the use of elevated temperatures, and thus simulate in a comparatively short time the effects of long-term storage. Using six different emulsifying agents, they prepared oil-in-water emulsions of Heavy Liquid Petrolatum U.S.P., using a standardized method. Samples of each of these emulsions were then subjected to temperatures ranging from 4° to 85° C. for periods varying from one to 40 days. The emulsions were microscopically examined at intervals, and their stability assessed by a globule-counting method, or by a globule-size frequency analysis (e.g. a determination of the relative proportions of globules falling into different size-groups). These techniques were capable of detecting relatively small degrees of deterioration in the emulsions. Each emulsion appeared to have its own optimum-stability temperature. The relative degrees of stability in the emulsions indicated by the heat-breakdown tests were roughly confirmed by subsequent long-term storage tests. The investigators suggest that their method could be used to estimate the likely storage life of emulsions.

Emulsified Cold Wave Lotions

Cold wave lotions, says T. Ruemele (*Manuf. Chem.* 24:432, 1953) are basically composed of aqueous solutions of ammonium thioglycollate which are either water white and clear, or have a milky appearance. Milky lotions appear to be increasingly popular and they are produced by the incorporation of a synthetic resin dispersion, or by the use of a normal dispersed oil-in-water emulsion within the aqueous phase which contains the waving ingredients.

Under certain circumstances the use of a synthetic resin as a clouding agent may interfere with the waving process owing to the formation of a resinous film upon the hair shafts. However, when a dispersed oil-in-water emulsion is used, certain beneficial effects may be expected. It is reasonable to assume that the presence of an oil will prevent damage to the hair from the alkaline action of the solution and leave the hair soft and glossy when the waving lotion is rinsed out.

From a consideration of the factors involved and a study of the pertinent patent literature, Ruemele concludes that methods have been developed to produce a satisfactorily stable emulsion. Thus, research has demonstrated that the use of both properly and adequately balanced non-ionic compounds having

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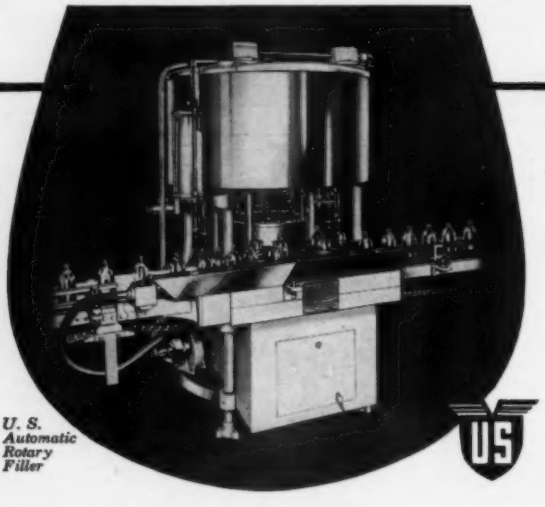

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hydrophilic properties (*e.g.*, polyoxyethylene derivatives of a suitable fatty acid) ensures the desired adsorption and orientation at the interface. Thus such a product may consist of a mixture of an oil-soluble, non-ionic emulsifier and a predetermined mixture of various substances (*e.g.*, fatty acid and polyhydric alcohol) in a definite ratio which, when introduced in the clear waving fluid, promotes the required stable emulsification and also the desired milky appearance of the lotion.

Ruemele points out, however, that the effect of perfumes upon the stability of the emulsion is most marked and is one which all too frequently receives scant attention. Quite a number of the ingredients of perfume compounds are incompatible with emulsion stability, owing to either electro-chemical or purely chemical adsorption effects. It is advisable, therefore, to give close attention to perfuming.

Baby Cream and Lotion

Practical formulas for making a baby cream and a baby lotion are given by W. Frazier (*Bull. Am. Soc. Hospital Pharm.* 10:448, 1953). The cream is prepared as follows:

Cetyl alcohol	**0.90 Gm.**
Stearic acid	**9.00 Gm.**
Hydrogenated vegetable oil	**4.50 Gm.**
Liquid petrolatum	**4.50 Gm.**
Lanolin, anhydrous	**3.60 Gm.**
Borax	**1.35 Gm.**
Triethanolamine	**1.35 Gm.**
Distilled water	**75.00 cc.**

Melt the cetyl alcohol, stearic acid, vegetable oil, petrolatum and lanolin together. Cool to 65° C. Dissolve the borax and triethanolamine in the distilled water. Add the aqueous solution to the oil phase slowly while stirring continually in a mixer until cool.

The baby lotion consists of:

Sodium alginate	**3.5 Gm.**
Butyl para-hydroxybenzoate	**0.1 Gm.**
Methyl para-hydroxybenzoate	**0.9 Gm.**
Distilled water	**670.0 cc.**
Triethanolamine	**5.0 Gm.**
Stearic acid	**9.0 Gm.**
Stearyl alcohol	**9.0 Gm.**
Cetyl alcohol	**5.0 Gm.**
Lanolin, anhydrous	**10.0 Gm.**
Liquid petrolatum, light	**300.0 cc.**

Dissolve the preservatives in hot distilled water. Transfer this solution to a continuous mixer and dust on the sodium alginate while mixing. Add the triethanolamine and stir until the liquid cools to 70° C. Heat the stearic acid, stearyl alcohol, cetyl alcohol, lanolin and petrolatum together until melted and cool to 70° C. With the temperature of both liquids at 70° C., slowly pour the oil phase into the water phase while mixing continuously with a mixer. Stir until cool.

Brilliantine Creams

Two formulas for making brilliantine creams are offered in *Pharmacy International* for October, 1953. The first of these formulas calls for the use of:

Light mineral oil	**40.0 parts**
White petrolatum	**9.0 "**
White wax	**2.0 "**
Oleic acid	**0.5 part**
Wool fat, anhydrous	**1.0 parts**
Sodium borate	**0.5 part**
Magnesium sulfate	**1.5 parts**
Sodium hydroxide	**0.5 part**
Water	**45.0 parts**
Perfume	**sufficient**
Preservative	**sufficient**

Dissolve the magnesium sulfate in 20 parts of boiling water, add the sodium hydroxide and set aside. Dissolve the sodium borate in the remainder of the water at 100°C. Melt the fatty ingredients together, mix the two aqueous solutions and pour into the fatty mixture with both at 65°C. Stir until cooled to 45°C. then pass through a homogenizer.

The second formula for a brilliantine cream is as follows:

Wool fat, anhydrous	**1.25 parts**
Spermaceti	**5.00 "**
White wax	**6.00 "**
Mineral oil	**44.00 "**
Triethanolamine	**0.75 part**
Water	**36.00 parts**
Diethylene glycol monoethyl ether	**6.00 "**
Perfume	**sufficient**

Melt the fatty ingredients and stir in the hot aqueous material.

Disinfecting Clinical Thermometers

A study of disinfection of oral thermometers contaminated with sputum from patients containing staphylococci, streptococci, and tubercle bacilli has been made by M. Frobisher, Jr., L. Sommermeyer and M. J. Blackwell (*Appl. Microbiol.* 1:187, 1953). They found that if the thermometer was wiped thoroughly with a mixture of equal parts of tincture of green soap and 95 per cent ethyl alcohol, followed by immersion in a 1.0 per cent solution of iodine in 70 per cent propyl or ethyl alcohol for 10 minutes, sterility was obtained.

Liquid Lip Rouge

M. Nakamura in Japanese patent 2300 (through *Chem. Abstr.* 47:6616, 1953) states that a liquid lip rouge may be prepared from:

Ethyl alcohol	**93.0 parts**
Ethyl cellulose	**3.5 "**
Oleic acid mono- or diglyceride	**3.5 "**

Five per cent of a dye is added to this solution.

Fluffy Cleansing Creams

It is stated in the British publication, *The Chemist and Druggist* (160:357, 1953) that "fluffy" cleansing creams usually contain a fairly large proportion (up to 30 per cent) of stearic acid. A typical formula for such a product consists of:

Stearic acid	**24.00 per cent**
Water	**64.00 " "**
Glycerine	**10.51 " "**
Potassium hydroxide	**0.99 " "**
Perfume	**0.50 " "**

Melt the stearic acid. Dissolve the potassium hydroxide in the water, add glycerine, and heat to 85°C., and slowly add to melted stearic acid with constant stirring. Perfume at 40°C.

Another variation calls for the use of:

Stearic acid	**15.0 per cent**
Cetyl alcohol	**0.5 " "**
Glycerine	**5.0 " "**
Potassium hydroxide	**1.0 " "**
Water	**78.5 " "**

As shown in the following formula the amount of stearic acid can be increased to 30 per cent with a proportionate adjustment of the potassium hydroxide.

Stearic acid	**30.00 per cent**
Triethanolamine	**1.75 " "**
Potassium hydroxide	**1.30 " "**
Water	**69.00 " "**
Glycerine	**5.50 " "**
Perfume	**0.50 " "**

Melt the stearic acid. Make a hot solution of the alkali, triethanolamine and the water, add the glycerine. Add the alkali solution to the stearic acid and mix until emulsified. Perfume at 40°C.

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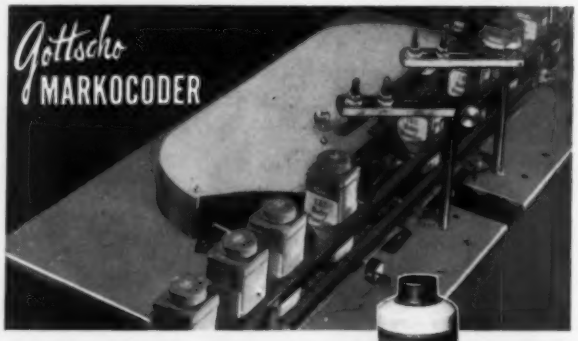

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Industry's Books

A Guide to Medical and Dental Photography, by Kenneth S. Tydings, S.P.E., Greenberg, New York, (1953), 124 pp., Paper cover, $1.95.

The acknowledged value of photography for the medical, dental, podiatric, nursing, and associated professions is so great, because of its educational, recording, psychological, etc. interest, that this book is written to help organize the available information and techniques into an easily usable form, requiring a minimum of equipment and set-up time, and assuring the finest results. In his many camera guides the author has constantly tried to simplify the many variables of photography to the extent that it can be used with box-camera simplicity. This is done on the premise that the actual record on a photograph is a mechanical effect which can be obtained by standardizing procedures and presetting the camera to reduce or eliminate most error-producing variables.

Hydrocarbons From Petroleum, by Frederick D. Rossini, Sillimon Professor of the Department of Chemistry and Director of the Petroleum Research Laboratory, Beveridge J. Mair, Principal Research Chemist and Associate Director of American Petroleum Institute Research Project 6, and Anton J. Streiff, Senior Research Chemist and Supervisor of American Petroleum Institute Research Project 6, American Chemical Society Monograph Series No. 121, Book Div., Reinhold Publishing Corp., New York, (1953), 556 pp., Cloth $18.50.

The results of more than 300 man years of work perfumed by the American Petroleum Institute Research Project 6 is assembled within the pages of this important new monograph. Information previously scattered over 140 technical and scientific publications is presented on the composition of petroleum; the fractionating and analysis of hydrocarbons; the development and operation of apparatus for fractionating by distillation, extraction, absorption and crystallization; purification and purity determinations of hydrocarbons; analysis and measurement of the physical properties of hydrocarbons; and a vast amount of other valuable data. Outstanding among the many valuable features of the book are the large number of charts, graphs and tables, many of which are so detailed that it was necessary to include them as foldout inserts. This carefully tabulated information, together with the unusually complete literature references to papers of the API project and to the work of other research groups, will make this monograph a welcome addition to the reference shelves of technical libraries and laboratories the world over, and of constant use to all research chemists in the petroleum and related fields.

What Is Hard Water, by Cornelia A. Tyler, B.S., A.M., Ph.D., Foster D. Snell, Inc., Consulting Chemists and Engineers, 30 pp., Spiral binding, Water Conditioning Research Council, Chicago, (1953), $1.75.

This is intended to educate the American public to appreciate and demand the many benefits of conditioned water. In producing this work, Dr. Tyler has searched out scientific journals of the past 30 years and has shown, in layman's language, how the condition of water can be controlled to make everyday living more pleasant and less costly. The book includes graphic explanations of why hard water is "hard", results of soap tests, review of effects on cooking and human consumption, and the conveniences in soft water usage. Ion-exchange and municipal hardness reduction are reviewed.

A Source-Book of Medical Terms, by Edmund C. Jaeger, D.Sc., formerly, Head, Department of Zoology Riverside College, 145 pp., Illus., Charles C. Thomas, Publisher, (1953), Cloth, $5.50.

Here are found assembled in alphabetical sequence the numerous word elements, combining forms, prefixes and suffixes from which modern medical terms have been coined. Following each are the Greek, Latin, French, or other words from which they were derived, together with their original meanings, often stated in forms more precise than those to which we are accustomed in our own language. As a special aid to those who have had no training in Greek and Latin grammar, there are given the various forms of nouns, adjectives and verbs, as well as related words, needed to account for the complete spelling of the majority of the numerous terms used in modern medical writings. With each entry many examples are given showing how the word elements have been used in the making of medical terms. These examples, taken from the dictionaries of medicine, have been dissected into their basic formative elements, all such units of word structure being separated by hyphens so as to make their recognition easy.

Handbook of Practical Bacteriology, by T. J. Mackie, C.B.E., M.D., Professor of Bacteriology, University of Edinburgh, and J. E. McCartney, M.D., D.Sc., Medical Bacteriologist, Institute of Medical and Veterinary Science, Ninth Ed., 677 pp., The Williams & Wilkins Co., Baltimore, (1953) Cloth $5.50.

The publication of this ninth edition of the Handbook of Practical Bacteriology, (First Edition 1925), calls for little in the way of prefatory remarks. The text has been revised throughout on the basis of recent advances in bacteriological knowledge and technique, but the general character of the book has been continued from earlier editions and the authors have endeavored also so far as possible to avoid any substantial expansion of the text by omitting methods (described in the previous edition) which have now been generally superseded by new procedures or have less application in bacteriological practice. Contents: Part I—Introduction. Part II — Bacteriological Technique. Part III—Pathogenic and Commensal Micro-Organisms (Including Filterable Viruses) and Bacteriological Diagnosis.

Perfumer's Shelf

Ylang Ylang Oil

In a discussion in the *Perfumery and Essential Oil Record* (44:161, 1953) it is remarked that the importance ylang ylang oil in perfumery is universally recognized. Its strong flowery scent makes it an important ingredient in a large number of perfumes to which it adds a very distinctive note which cannot be imitated in any other way.

There are three very different types of ylang oil: the Manilla, Reunion and Java (Cananga) varieties. However, the first of these has practically disappeared from the market. A good ylang oil is a liquid possessing a clear yellow color which is very susceptible to the effects of light and air. It has to be kept, therefore, in well-sealed, non-transparent casks.

Theoretically, there is no difference between the oil from Reunion and that from Java. They are both obtained from the same species of plant, the differences apparent in the flowers and oil only being due to the differences in the cultivation methods employed, climatic conditions, soils and the way in which they are distilled. A Java oil has a less refined, and more pronounced, terpene-like aroma and cannot be used in such delicate compositions as the oils from Madagascar and Reunion. For the commercial purposes, ylang oil is classified in four qualities: Extra, first, second and third grade.

There is no absolute criterion for the differences distinguishing these qualities from each other, for this is sometimes based on the length of distillation or on the specific gravity, while it is also sometimes left to the discretion of the distiller himself to determine the quality, depending on the actual bouquet. It would be a simple matter to falsify, but fortunately this does not happen very often. Oils are sometimes thinned down or diluted with benzyl benzoate, though this can be determined by ascertaining the speed of evaporation under certain conditions. The addition of other synthetic products is too risky.

The concretes and absolutes now on the market are obtained by using the classical procedure as employed in Grasse. These products are of interest and importance to the perfumer. It is recognized that by using the extraction method all the aroma elements can be isolated from the blossom, something that can never be done when using the water vapor distillation method. This fact alone is sufficient to justify the use of concretes and absolutes in fine perfumes. The aroma of the products obtained by extraction differs considerably from that of the distilled oils; it is "rounder" and more "velvety" and the true character of the flower is more pronounced.

Ylang concrete does not have the classic outward appearance of other concretes. It is a viscous, oil-like product with a reddish-brown color. It contains several waxes and resins which sink to the bottom after some time. They can be removed easily by decantation and filtration; leaving a thick transparent liquid.

Production of Isosafrole

A process for making isosafrole is described by S. Tashiro in Japanese patent 5987 (through *Chem. Abstr.* 47:10005, 1953). In his method, safrole is heated at 200° C. and passed through a layer of granulated calcium oxide. The affluent is then treated with a mixture of one per cent of calcium oxide and 1.5 per cent of potassium hydroxide, heated at 230° C. The resulting product is distilled to give 90 per cent isosafrole.

Russian Studies on Oil of Tansy

The composition and anthelmintic action of oil of tansy have been reported by the Russian investigators, Y. Maizite, A. Klayava and L. Kluga (*Kim. Inst. Zinatnish. Ralssti, Latvias PSR Zinatnu Akad.* 1:101, 1950 through *Chem. Abstr.* 47:10175, 1953). In their work, the essential oil of tansy (*Tanacetum vulgare*) was obtained in an amount of 0.5 per cent of steam distillation of the blossoms. The main component of this oil, *alpha* and *beta* thujone (tanacetone), was separated as the semicarbazide, corresponding to 50 per cent of the oil.

Tests with earthworms were made to determine the biological action of the oil. The average smallest lethal dose of thujone was found to be 27.5 mg., while the lethal dose of the oil of tansy was 43.3 mg. After removal of the thujone, the oil still had a biological action, but this effect was smaller. Other substances with the same action are present in the oil.

Menthofuran Preparation

A modification of the Triebs synthesis was used by R. Pallaud and J. Berna (*Ind. parfum.* 8:154, 1953) to prepare menthofuran. In their procedure, pulegone prepared from peppermint oil (1 mol.) is introduced dropwise into a mixture of 1.5 moles of sulfuric acid and three moles of acetic anhydride over a period of three hours, at a temperature of −5° C. The mixture is poured onto ice, filtered through glass wool, washed with water, and kept in the refrigerator. It is recrystalized from anhydrous methanol; the yield being 75 to 80 per cent.

The sulfate ester obtained is introduced with an equal weight of zinc oxide into a distilling flask and heated under nitrogen or carbon dioxide in an oil bath up to 300° C. Distilled menthofuran is washed with water and alkali and again distilled under carbon dioxide or nitrogen. The distillate, obtained in an 80 per cent yield, had the following properties:

Specific gravity	**0.972**
Specific rotation	**+92°**
Index of refraction	**1.4889**

Antibacterial Action of Spices

The actions of 27 different spices were tested by 15 experimental methods by H. Dold and A. Knapp (*Z. Hyg. Infections-krankh.* 128:696, 1948 through *Chem. Abstr.* 47:9419, 1953) against *Escherichia coli, salmonella typhosa, Shigella paradysenteriae, Staphylococcus* species, *Proteus vulgaris, Bacillus subtilis, Serratia marcescens,* and *Vibrio comma.* Only garlic was completely inhibitory to all bacteria. Onions and cloves were inhibitory to all but *B. subtilis.* Radish, horseradish, mustard, and marjoram inhibited only some of the or-

TOP NOTES by Fritzsche

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January - Carnation or Snowdrop

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ganisms. The most active spices were from the Liliaceae family, followed by Myrtaceae, Cruciferae, and Labiatae. The antibacterial action results from the action of the volatile oils (also containing sulfur compounds). There is a secondary antibacterial action from tannins and alkaloids. Some data are given on the stability of the action of oils of onion and garlic.

Flavors for Pharmaceuticals

In a comprehensive discussion on flavors for pharmaceuticals, E. H. Hamann (*Perf. & Essent. Oil Rec.* 44: 251, 1953) points out that the term flavor is associated not only with products which are to be taken by mouth and swallowed, but also with products that are not ingested, such as mouth washes and dentifrices. He notes that flavors are used to increase palatability by masking unpleasant flavors or by giving a pleasant flavor to a bland product in order to increase product acceptance. In masking problems there are two distinct categories, the masking of odor and the masking of taste, both of which may be present. The flavor of time-tested pharmaceutical vehicles can be dissociated into three component parts: odor, taste and consistency. For example, Aromatic Eriodictyon Syrup NF has the aromatic and odorous principles of the essential oils of cardamom, sassafras, lemon and clove, the taste of Eriodictyon with the sweetness of sugar and the consistency of a syrup. The purpose of each is to cover up disagreeable odor and taste. The consistency or tactual characteristic of a flavor can influence palatability. The desired texture or viscosity is obtained by means of syrup, glycerine and vegetable gums and gelatine emulsions. Their effectiveness may operate by diminishing the rate at which sugars are diluted in order to overcome the slower acting or less soluble bitterness, or it may prevent mechanically the complete absorption of the bitter principles in the process of consumption. Thus it is found that a change, an increase, in viscosity of otherwise identical formulations can act to improve the flavor.

Hamann stresses that in any flavor discussion the importance of color must not be forgotten. Sufficient to say that color should complement the flavor and that a good color is a definite aid to flavor acceptance. In addition, there is another quality inherent in certain flavor ingredients which is important in those flavors used to cover an unpleasant characteristic. The efficiency of Fluid Extract Eriodictyon has been attributed to the paralyzing effect of its resins on the taste buds, or the ability of the resins to absorb basic components of a mixture as, for example, in one containing quinine. Whatever the mechanism may be there are other flavoring components which act in a similar fashion. For example, menthol by virtue of its cooling sensation; sodium glutamate which accentuates some flavors; methyl salicylate and vanillin which have a numbing action in the mouth.

It is pointed out that the various essential oils in official use, such as orange, lemon, coriander, cinnamon, cardamom and peppermint, but more particularly the citrus oils, are available in many forms and types to suit various purposes. Flavor concentration has been attained along with increased stability and solubility. Oil of orange, for example, is offered as a pure expressed or distilled oil, a partially concentrated oil in fivefold or tenfold concentration, or other values, and as terpeneless oil. Imitation oils are also available in all concentrations and may have a value beyond that of a lower cost. In addition, there are many oils not official which are of interest in their own right as new flavor or as closely related flavors. In the citrus group, there are oil of grapefruit, tangerine and lime. Among the spice oils, cinnamon Ceylon, ginger, marjoram, celery, sage, origanum and savory present flavor varieties which can be and are being used to obtain different effects or certain practical advantages.

In indicating the chief problems involved in flavor application, Hamann points out certain incompatibilities inherent in pharmaceutical products. In his opinion the vast field of new pharmaceuticals presents a formidable array of problems and each one defies a standard flavor recommendation and requires a tailor-made flavor which will suit its physical and chemical properties. The hydrogen ion concentration is not only a limiting factor for the type of flavor that can be used, but limits the use of such a flavor depending upon its constituents. Eriodictyon, for example, is incompatible with acids. Fruit syrups discolor and flavor is destroyed in alkaline media. In alkaline media, cinnamon oil may lose its characteristic flavor, and oils, such as clove oil, may cause discoloration of the finished product. In liquid preparations, precipitations may occur in storage, which a change in hydrogen ion concentration would rectify. According to Hamann, the choice of solvent or emulsifier should be given careful consideration and may have considerable influence on product acceptance. A uniform distribution of flavor throughout the product is essential and for this purpose there are the permissible solvents such as water, alcohol, glycerine, propylene glycol and the fixed oils. Emulsions with gums, gelatine and methylated cellulose are also used. Dispersing agents or solubilizers, such as the esters of glycerine or sorbitol in combination with glycols are finding increased use. These various media modify the flavor not only as already indicated by changing the viscosity but also by changing the flavor solubility and volatility. Emulsions are milder in their flavor effects than true solutions because of less rapid absorption. Flavoring materials dissolved in fixed oils appear milder because of decreased solubility and volatility.

Sensitivity to Bergamot Oil

In response to an inquiry concerning sensitivity to oil of bergamot, it is stated in the *British Medical Journal* (2:449, 1953) that the skin reaction to this oil is found only in certain people. In these subjects the application of oil of bergamot to the skin results in a temporary increase in light sensitivity on that particular area of skin. The mechanism by which this occurs is not known, but the substances most often involved are of vegetable origin, and for this type of reaction the term "phytophoto dermatitis" was coined by Klaber and Wittkower in 1939.

Indian Juniper Oil

A. Bhati (*J. Indian Inst. Sci.* 35A:43, 1953) reports that the essential oil obtained in 0.83 per cent yield from the berries of *Juniperus communis* grown in East Punjab had the following constants:

Specific gravity	**0.9180**
Specific rotation	**+20.8°**
Index of refraction	**1.4820**
Acid number	**4.7**
Ester number	**20.5**

It contained *d*-alpha-pinene as the major constituent; this being identified as the nitrosochloride and nitrobenzylamine. This is in agreement with the composition of European oils but not with those of another Indian investigator, who found *d*-sabinene as the main constituent.

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Patent Thoughts and Trends

*by Thomas Cifelli, Jr.**
PATENT ATTORNEY

PATENTS IN REVIEW: 1953

The year, 1953, as far as patents were concerned, was not a very significant one. No decisions of particular general importance were handed down. The year did, however, see the first year of operation under the Patent Act of 1952. While only a few cases have thus far been decided under this act, it has already become apparent that the courts are inclined to take the position that the act merely codified the old law and did not effect any startling changes.

This attitude of the courts has already been demonstrated with regard to section 103 of the act. This section reads as follows:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

It had been felt by many patent practitioners that this provision definitely overruled certain court decisions which presumably required a "flash of genius," by reason of the second sentence of the section. Several court decisions, however, have taken the position that this section merely restated the existing law. In coming to these decisions, the courts have relied on statements made in the reports of the House and Senate committees on the judiciary.

There has, however, been an instance of a case where a court took a broader view of the last sentence of section 103 and stated that the wording not only rejected the "flash of genius" test but went farther and pointed out that one may have a patent if he just "stumbled" upon his invention or hit upon it as a result of an accident.

At the moment it appears that about the only definite factor in the immediate future, as far as patents are concerned, is that applicants will have to pay somewhat higher government fees than is presently the case. This development stems from the fact that the Eisenhower administration has charged the various federal agencies with the task of reviewing their fee schedules so that wherever possible the revenue is more nearly in line with their operating expenses. While some favored agencies may continue to operate under the fee schedules heretofore existing it is not likely that the Patent Office will be one of these. The present fee for filing an application is $30.00 in the usual case and there is another government fee of $30.00 which is payable after the application has been allowed. While these fees are rather nominal, particularly when compared with fees exacted by foreign countries, it is regrettable that inventors, who in the long run are public benefactors, will be called upon to pay higher fees in the future.

Pressure-Packing Patents

The field of pressure-packed drugs and cosmetics is now in full swing and getting bigger quickly. At first blush it would appear that this is one field where patents will not play an important part, inasmuch as pressure-packed goods involving the use of propellants is not new. Apparently, most people working in this field have felt this way, judging from the complete lack of any patent literature on the subject until quite recently. Not everybody felt this way, however, as evidenced by the recent surge in patent talk in this field. Impetus patentwise doubtless was given by the issuance of U. S. 2655480 on pressure-packed shaving creams. This Carter-owned patent was the principal subject of last month's article.

As this present article is being written, the trade is buzzing with conjecture on the Zonite Products development of a low pressure propellant said to be useful with commercially available glass bottles. No patents are believed to have been granted on this latter development up to the present but it is understood that patent protection will be forthcoming in the near future.

The Carter and Zonite cases illustrate the need for an evaluation or a re-evaluation of policy or lack of policy concerning the patenting of developments in the pressure-packing field. It is less costly and more conducive to business peace of mind to obtain patent protection on your finding rather than sit back and let the other fellow do so, thereby making it necessary for you to have your business adversely affected and perhaps even having to go into court in order to defend your position.

Patent Coverage

The product claims embrace two major concepts, each being directed primarily to the production of therapeutically effective levels of penicillin in the patient's blood stream for a prolonged period of time after intramuscular injection: (1) an injectable penicillin preparation using a gelled injectable oil vehicle, and (2) the use of "small particle" (i.e. in the range of from approximately 0.2 to approximately 50 microns) procaine penicillin in this gel. All of the product claims include the first concept with variations in scope as to the nature of the three essential ingredients: oil, gelling agent and penicillin, and also as to the amount of the gelling agent employed. Two of the product claims (9, 14) combine both concepts. The preferred form of the product employs a vegetable oil such as peanut oil galled with two per cent aluminum monostearate and contains small particle procaine penicillin.

The process claims are directed to the procedure by which the product is manufactured and specify the particular substances brought together and the steps and conditions necessary to the

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proper combination of those substances to achieve the desired purpose. They differ in scope as to the penicillin incorporated, both as to type and particle size.

Penicillin Litigation

The drug field in the U. S. A. is one which is relatively free from patent litigation, at least during the past few decades. This is particularly apparent when one takes into account the appreciable number of patents issuing in the drug field. On the other hand, the cosmetic field, which is one which does not obtain very many patents, nevertheless seems to find itself involved in considerable patent litigation.

One of the few drug suits of recent years was that involving the Parke-Davis patent on anti-anemia vitamins made from natural sources. This case was briefly commented upon in last month's artiele.

Another recent drug suit involves Bristol Laboratories' U. S. patent 2507193. This patent was successfully litigated in the Indiana federal court against Schenley Laboratories, Inc.

The opinion of the court constitutes a veritable treatise on penicillin therapy and is being freely drawn from here.

Early History of Penicillin

Although penicillin was discovered by Fleming in England, in 1928, and reported in 1929, it received but little attention for the next ten years. In 1938 the tremendous possibilities of the drug in combating infections were realized and in 1941, following cooperation between the British and American governments, doctors, scientists and pharmaceutical manufacturers, mass production of the drug began in this country. Although first supplies of the drug were reserved for use by the armed forces, by July 1943 there was a sufficient amount being produced here so that supplies could be furnished to civilians and governmental agencies for use and investigation. In May 1944 penicillin became available to certain hospitals throughout the country and by April 1945 its production had progressed to the point where it was released for unrestricted civilian sale and use.

Problem of Maintaining Therapeutic Levels of Penicillin

It was soon found that the human body quickly disposed of penicillin. After intramuscular injection of the early forms of penicillin in water (other modes of administration such as oral, subcutaneous, intravenous and insufflation being wasteful or physiologically objectionable or otherwise less desirable), the entire dosage was rapidly absorbed and excreted within two to four hours. Thus the continuous treatment of systemic infections with these preparations required repeated and painful injections on the average of one every three to four hours throughout the course of the illness usually necessitating hospitalization of patients, for a week for example in the treatment of syphilis, to insure their availability for the injections.

The need for procedures or preparations which would prolong therapeutically effective blood levels of penicillin, without the necessity for the inconvenient, painful and frequent injections, wasteful of the precious drug, was quickly recognized by all who worked with penicillin.

The desired prolongation of blood levels following injection was for the longest possible time, not only to avoid hospitalization, which could be obviated by a preparation providing 24-hour levels and thus permitting the treatment of ambulatory patients, but also to avoid the risk that some of the patients might not return for the subsequent necessary injections. This risk is especially significant in the case of diseases such as syphilis, and the related crippling and disfiguring diseases of pinta, bejel and yaws which affect large masses of people in various impoverished areas of the world and which, being nonvenereal in form, attack children as well as adults. The time required for penicillin to rid the system of the pathogens causing these diseases is longer than that required to combat most other infections and doctors prefer the maintenance of uninterrupted effective levels of penicillin in the blood for a period of from four to six days. Since these diseases are among those from which there are no known immunizations, their eradication would be thwarted by the failure of a percentage of insufficiently treated patients to return, thus leaving them to continue as carriers of the disease and as infectors and reinfectors of others. Hence, an injectable penicillin preparation which could, with one treatment, maintain effective levels for four to six days was long a goal of syphilologists and was essential to the success of any program of mass eradication of yaws, pinta and bejel in undeveloped, nonurban countries where it is difficult enough to reach the natives once, much less to induce any large proportion of those suffering from a disease to submit to a series of injections.

Procedures and preparations to prolong penicillin blood levels also had to meet the requirements of ease of administration and a minimum of adverse body reactions to the preparation, both systemic and at the site of injection.

Prior Attempted Solutions

The universally recognized need for penicillin injection procedures and preparations which would provide maximum prolongation of therapeutically effective blood levels resulted in intensive efforts by numerous investigators in the medical and pharmaceutical fields, including plaintiff, defendant other manufacturers in this country and elsewhere, to develop means of delaying the absorption and excretion of intramuscularly injected penicillin. Also, researchers over the years had previously attempted to solve the problem of substantially prolonging effective blood levels of other drugs and their findings were promptly tried, but without significant success, in penicillin therapy.

Among the attempts, prior to the disclosure of Buckwalter's invention, to prolong penicillin blood levels following injection were those which sought to impede the circulation of the blood through the injection site, such as by tourniquets, ice packs and drugs which, when injected with the penicillin, constricted the blood vessels in the area; those which sought to reduce the rate of excretion of penicillin, such as by drugs which, after injection with penicillin, competed with it for excretion by the kidneys; those which changed the injection vehicle from water to emulsions and oil; those which added to the various vehicles substances such as globin, aluminum hydroxide, magnesium sulfate, protamine zinc, beeswax and pectin; and those which sought less soluble penicillin salts. Only three of these prior attempts achieved any substantial degree of penicillin blood level prolongation: "POB," an injectable preparation comprising oil, beeswax and penicillin; "POP," comprising oil, pectin and penicillin; and the development of the procaine salt of penicillin.

POB was first reported by Dr. Romansky in 1944 and, during the period 1945-1947, was sold in substantial quantities, using first calcium, and later sodium and potassium penicillin. This preparation kept the penicillin in a "depot" at the site of injection, re-

(*Continued on page 145*)

Animal Health

Vitamin K for Bleeding in Chickens

According to S. Ridlen (*Country Gentleman* 123:80, Nov. 1953), a shortage of vitamin K may be the cause of internal bleeding losses in broiler flocks. Field reports indicate the prevalence of this condition in many sections, with losses running as high as 40 per cent. Discovery of the role of vitamin K came in Illinois experiment-station tests with corn-soybean rations. It was found that the basal ration resulted in hemorrhages. Blood was found under the skin on the brain, as "black shanks" in thigh and breast muscles, in heart tissue and on the wings. A shortage of vitamin K seemed to be the cause. The Illinois workers believe the bleeding occurs because rations do not carry enough of the vitamin or because a smaller amount is made in the intestinal tract. The use of more solvent extracted soybean meal would reduce vitamin K. Addition of growth stimulators and anticoccidiosis drugs could inhibit intestinal synthesis of the vitamin. Antibiotics or other drugs were added to the basic ration and clotting time was checked. Some had no effect—others blocked clotting—in one case for an hour. Normal time is two or three minutes.

The Illinois workers indicate that excessive feeding of drugs should be avoided. They recommend that a minimum of five per cent alfalfa meal be added to all chick rations. If there is a severe problem, it may pay to add 5 Gm. of vitamin K to each ton of feed.

Pregnancy Disease in Sheep

Pregnancy disease, says H. H. Berrier (*Vet. Med.* 48:405, 1953) is generally considered to be the most costly of all sheep diseases. When one considers that not only a single lamb, but two or three lambs and the ewe are usually lost in each case, the economic importance of this disease is realized. Losses of meat, wool, and working hours are significant.

In pregnancy disease, the ketonuria test is strongly positive before the onset of clinical symptoms and remains so. Ketone bodies alone are not toxic, but because of their acid nature they combine with sodium and, to a lesser degree, with potassium of blood plasma and body tissue fluids which are excreted in the urine as neutral salts. In this manner, the fixed base of the body is depleted and a condition of acidosis is produced. Acidosis is responsible for paralysis, followed by coma and death.

On the basis of previous experience with ketogestin, a cortisone-related hormone, in the treatment of bovine ketosis, Berrier decided to try this compound in 14 cases of pregnancy disease (ketosis) in sheep. Ketoges was used in these cases because experimentally it has profound effect upon carbohydrate metabolism, accelerating production of blood glucose from amino acids (gluconegenesis), therefore decreasing fat metabolism. Doses ranging from 500 mg. to one Gm. appeared to be effective as a therapeutic treatment of pregnancy disease depending upon the severity and stage of the disease.

Low Temperature Storage of Bull Semen

It is pointed out by L. E. A. Rawson and C. Polge (*Vet. Rec.* 65:677, 1953) that considerable progress has been made during the last year in the technique of preserving semen at very low temperatures. The possibility of storing frozen semen for very long periods promises great practical advances in artificial insemination. After the first report that bull spermatozoa could be protected against the damaging effects of freezing and thawing by the addition of glycerine, it was shown that bull semen, retained normal fertilizing capacity when kept frozen at –79° C. for relatively short periods of time. Later, fertility results obtained with bull semen kept at –79° C. for up to 32 weeks were described by Pulge and Rowson.

In their current report, these investigators report the results obtained after periods of at least 12 months. They found that bull semen diluted in a ratio of 1:4 in the presence of 10 per cent glycerine had maintained normal fertilizing capacity durine one year's storage at –79° C. Seven out of 12 cows became pregnant following insemination with the semen diluted to 1:100 and kept frozen at –79° C. for two to 24 days.

Cobalt in Animal Nutrition

In summarizing the role of cobalt in animal nutrition, R. F. Bourne (*No. Amer. Vet.* 34:546, 1953) says that this element is believed to be nonessential for higher plants although taken up and stored by them, from which source herbivorous animals require the element. Alimentary microorganisms synthesize cobalt-containing vitamin B_{12}, which is believed necessary to normal metabolism in all domestic animals. The cobalt and B_{12} requirements of ruminants appear to be much higher than for nonruminants.

Both cattle and sheep suffering from cobalt deficiency respond dramatically to the oral administration of cobalt salts. Cobalt given by any other route is ineffective but parenteral administration of vitamin B_{12} is corrective, but only if given in enormous doses. The effective doses of cobalt for cattle and sheep depend upon the degree of deficiency. In Florida, calves fed from 5 to 10 mg. of cobalt daily showed a satisfactory response. A total daily intake of .07 mg. of cobalt is believed to be sufficient for sheep.

Medicating Captive Animals

In a discussion on the medical aspects of animals in captivity, G. Iles (through *Chemist & Druggist* 160:460, 1953) said that the main causes of death in these animals were diseases of the respiratory system, especially tuberculosis. While it was doubtful whether humans acquired that disease from contact with animals it was likely that animals could be infected by humans.

Administration of medicines to animals was often difficult—the cooperation of the animal was required. Flavored preparations of the sulfonamides and penicillin for children were often very valuable for that purpose.

Often the giving of injections even to big animals like the tiger presented little difficulty as animals seem to be much less sensitive to pain than humans. The difficulty of giving anesthetics preparatory to operation or x-ray examination was usually solved by coaxing the animal into a box and blowing in a mixture of ether and chloroform vapors. Members of the cat family were difficult to anesthetize and the difference between anesthetic and fatal dose was small.

The following points were also mentioned:—Elephants, giraffes and bison suffered from rheumatism and were treated with aspirin (an elephant receiving ¼ lb.; giraffe, two oz.; bison, one oz. for a single dose). Elephants suffering from chills or stomach trouble were often given a bottle of brandy with a little water and sugar. Penguins were very prone to suffer from a mycotic disease of the lungs and from enteritis. The latter was treated by administering sulfaguanidine concealed in a fish. A hippopotamus suffering from abscesses had calmly had them syringed with hydrogen peroxide solution.

Treatment of Ketosis in Cattle

It is pointed out by J. C. Shaw, B. C. Hatziolos, E. C. Leffel, A. C. Chung and J. Gilbert (*No. Amer. Vet.* 34:251, 1953) that the signs and symptoms of ketosis normally appear a few days to a few weeks following calving. They usually include a lack of appetite, depressed appearance, loss of weight, and a drop in milk production. Affected animals often may be stiff in their movements and develop incoordination.

These investigators believe that spontaneous or clinical ketosis (acetonemia) in dairy cows is due to an adrenal insufficiency or, more specifically, that it represents one of the phases of the general adaptation syndrome involving the pituitary-adrenal cortical system. In their investigations adrenocorticotropin (Adrenomone), cortisone (Cortone) and compound F (hydrocortone), in adequate dosage, produced the most rapid and most certain cure in studies on approximately 150 cases of ketosis. No failures were encountered in uncomplicated cases. Sodium propionate was less effective than the above but much more effective than sodium acetate. Adrenocorticotropin, cortisone and compound F were so effective that glucose injections given as supplement were not helpful. Glucose is to be recommended as the primary treatment when propionate and acetate are used without cortisone or adrenocorticotropin (ACTH). Preliminary work indicates that acetate feeding will not prevent the development of ketosis. It still remains to be determined whether propionate feeding will be helpful in preventing the development of ketosis.

Of related interest is the study of A. B. Christian and C. P. Segard (*J. Am. Vet. Med. Assoc.* 122:479, 1953). They reported that adrenocorticotrophic hormone (ACTH) in large doses has proved effective in treating ketosis. Smaller doses of ACTH used in conjunction with salicylates and vitamin K have been shown to be effective in this disease.

Chloramphenicol for Ophthalmia of Cattle

It is remarked in the *Australasian Journal of Pharmacy* (34:633, 1953) that ophthalmia of cattle, also known as pink eye or eye blight, is very contagious. The bacteria which cause it are present in the tears from the affected eye, but also occur in very large number in the discharges from the nostrils. Flies are believed to be important in transmitting the infection from eye to eye, but droplet infection due to sneezing and snorting is probably important also. If practicable, therefore, affected animals should be drafted off and isolated in a separate paddock.

When bovine ophthalmia is induced artificially the incubation period is about four days. The first sign of the disease is weeping and some swelling of the eyelids. Then an opaque patch appears on the cornea. This may spread, so that the whole surface becomes milky-white, and, in very severe cases, it sometimes ulcerates and ruptures. The animal is often temporarily, and sometimes permanently, blinded, but many cases recover spontaneously in a month or so. Condition is lost, milk production falls, and accidents are frequent because the animal is blind or partially so. In all cases which have been treated by smearing inside the lower eyelid an ointment containing the antibiotic, chloroamphenicol (Chloromycetin), there has been an excellent response, compared with untreated eyes which have been left as controls. In early cases, a single treatment has resulted in very obvious improvement within 24 hours. Two treatments, night and morning, and sometimes only one, have been sufficient to cure early cases. More advanced ones may require treatment night and morning for two or three days.

Bacitracin for Swine Enteritis

In a report on the use of bacitracin for the control and treatment of swine enteritis, I. S. Rosoff and W. Abel (*Vet. Med.* 48:369, 1953) state that the problem presented by hemorrhagic dysentery is one of repeated attacks following initial clinical control with arsanilates, and one of severe stunting. With use of arsanilate therapy alone, it was found that symptoms reappeared five to 14 days after cessation of water medication. In many cases, stunting had made the hogs economically worthless although no further clinical diarrheas had been noted. Use of bacitracin in these cases was aimed primarily at prevention of stunting and control of further clinical outbreaks after initial control by simultaneous use with arsanilates. In most of the outbreaks it was found necessary to use arsanilates for only two to three days. This water therapy was also necessary because of anorexia in many of the cases. Most of the cases of swine enteritis encountered evidence good clinical control within two to four days. Some required up to five or seven days for complete control of symptoms. Growth stimulation, greater activity, and a marked increase in feed consumption was usually apparent within three days after institution of therapy.

Rosoff and Abel found that bacitracin met the objectives of enteritis therapy in their practice much more completely than did the use of sulfonamides, arsanilates, or vitamin B_{12} preparations. Continual therapy by feed administration with no toxic effect was easily accomplished. Its antibiotic activity in great measure helped overcome stunting effects of various dysenteries. Rapid control of infective agents was attained.

Sheep Nutrition and Anthelmintic Efficiency

Anthelmintics will work more effectively in sheep that are kept in good condition, according to an item in the *Farm Journal*. In Wisconsin trials, phenothiazine removed 77 per cent of the worms from sheep kept in good condition right along, 52 per cent from sheep brought up to good condition at time of treatment, and only 22 per cent from sheep in poor condition. Both copper sulfate and copper sulfate plus nicotine gave results that varied with condition, although neither was as good as phenothiazine. They removed 46 per cent of the worms from the best-conditioned sheep, 27 per cent from the next group, and six per cent from the thin ones.

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Abreast Of The Markets

Prospects Favorable for Markets, 1954; Alcohol Production Increases; Guenther Reports on Oils

Dealers reported that business in 1953 was very favorable, and they felt it would continue well into the new year. Essential oil men indicated there was much activity in the oils during the latter part of the year, with one essential oil house reporting many advance orders that would extend through February or March.

As far as price was concerned, however, there were a few scattered changes in the various markets. The over-all picture appeared quite stable, as shown by the graphs. The essential oils index advanced by 2.2 points and is now at 146.3. This was caused by a price increase in citronella oil, even though decreases in clove and eucalyptus oils counteracted it somewhat. The botanicals index went up 0.7 point as a result of an increase in balsam tolu; other botanicals, on which the graph is based, were constant.

The medicinal chemicals showed no changes whatsoever, although such items as cream of tartar, mercury, alcohol and menthol all appear as though they will show some interesting changes in the near future.

The cosmetic raw materials index went up to 140.6 as a result of one item — balsam tolu — which advanced in price.

As far as the essential oils are concerned, a few interesting developments have occureed. In the case of bergamot oil, for example, this item has become quite firm as a result of heavy buying by Russia, according to reports. Anise and cassia oils, of course, continue to be almost impossible to find, while on the domestic scene, peppermint oil along with spearmint oil are showing very firm tendencies, with further price advances to be expected.

An interesting situation is shaping up in alcohol, for synthetic production is now going on at such a rapid pace that it alone could almost take care of U. S. needs. It remains to be seen how the fermentation alcohol market will meet this emergency.

Guenther on Essential Oils

Dr. Ernest Guenther, vice-president and technical director of Fritzsche Brothers, recently returned from a survey of Latin American essential oil production. He reports that the essential oil business in this area is having a difficult time. In fact, he states, essential oil production in all underprivileged and underdeveloped countries appears to be coming to an end. In South America, especially, the cost of labor is up, and the standard of living is higher than it used to be. This will certainly result in higher-priced oils, according to Dr. Guenther. Such a condition is a serious one when it is considered that essential oils produced in the Eastern countries remain on a lower price scale because of reduced labor costs. It is difficult for the South American and Central American areas to meet such competition.

Another factor is that many of the prospective essential oil producers in these countries feel these oils are too risky to pay any attention to, and so they turn to more dependable products, like coffee, rice and foodstuffs.

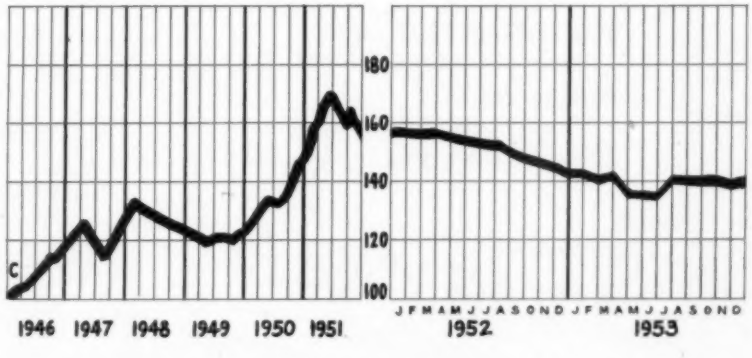
Alcohol Production Up

Although demand for alcohol is reportedly steady at the present time, a new factor has entered the picture—that of increased synthetic alcohol production to the point where it almost satisfies the U. S. demand. This poses the very important question of where fermentation alcohol will fit into the picture during 1954, since this market will have increasing difficulty in competing with the synthetic. In addition, much French alcohol has been entering this country, which has also had a softening effect on the market. Some sources indicated late last month that price reductions might be forthcoming before too long.

According to one recently published report, about 60 per cent of the alcohol produced in 1953 was of synthetic origin

(*Continued on page 116*)

25 Cosmetic Raw Materials—Unweighted Price Index. 1926=100.



The cosmetic raw materials index advanced from 138.3 to 140.6. Balsam tolu was higher.

Prices quoted in this section were current on the first of this month.

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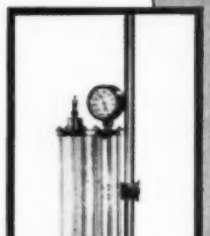

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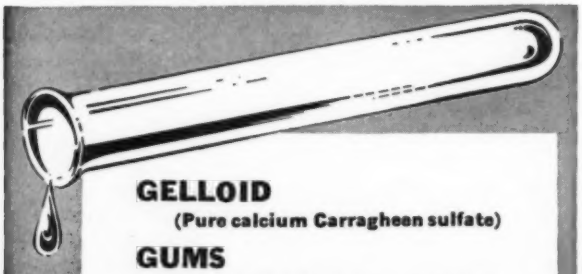

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Salinas Labs. Extracting Chlorophyll from Lettuce; Mercury Showing Considerable Strength; Balsams Firmer; Papain Down

Salinas Laboratories, Inc., in Salinas Valley, California, which was established early in 1953, has just about completed a new $200,000 plant for getting chlorophyll from lettuce culls. Up to the present time the company has been producing about 120 pounds of chlorophyll a day, but the new plant will enable it to compete seriously with the alfalfa chlorophyll production, say company authorities.

James Macey, general manager of Salinas, reports that the company first reduces the lettuce culls to dry meal from which it obtains crude oil. If the lettuce culls are scarce, as they are from November to April, Salinas switches to celery as a starting point.

At the present time, Salinas ships the extract to the Collett-Week Corp. in Ossining, N. Y., for the distillation of chlorophyll.

Mercury Becoming Firmer

A definite tightening up seemed to be developing in the quicksilver market early this month and was attributed to the combination of increased buying interest which in turn was said to have been caused by the possibility of a strike on the New York waterfront.

The Bureau of Mines reported that imports of quicksilver during the third quarter of 1953 were more than twice as much as they were in the previous three months.

The spot market was quoting the metal at prices starting at $189 a flask.

Cream of Tartar Unchanged

Cream of tartar prices remained in the range between 33 and 35 cents last month, although it appeared that a reduction might be forthcoming owing to the arrival of considerably cheaper imported material. Demand for the item was fairly active, and at the same time, supplies were more than adequate.

Glycerine Active

The price of glycerine continued at 33½ cents a gallon and is expected to remain at that level for the time being. Demand was on the active side and will probably remain so during the first quarter of this year.

Cascara Sagrada Firm

Cascara sagrada was in a very firm position in December owing to a shortage at the origin caused by last year's labor shortage. The reduced yield at that time is now beginning to be felt. This condition is true of other domestic botanicals as well. Prices of cascara remained in the vicinity of 34 cents a pound.

Menthol Sluggish

Natural menthol continued in a sluggish manner last month, with the price remaining in the range between $5.10 and $5.20 a pound for the Brazilian material. In spite of the price level for the South American menthol, some Japanese material has been selling for as high as $8 in this country.

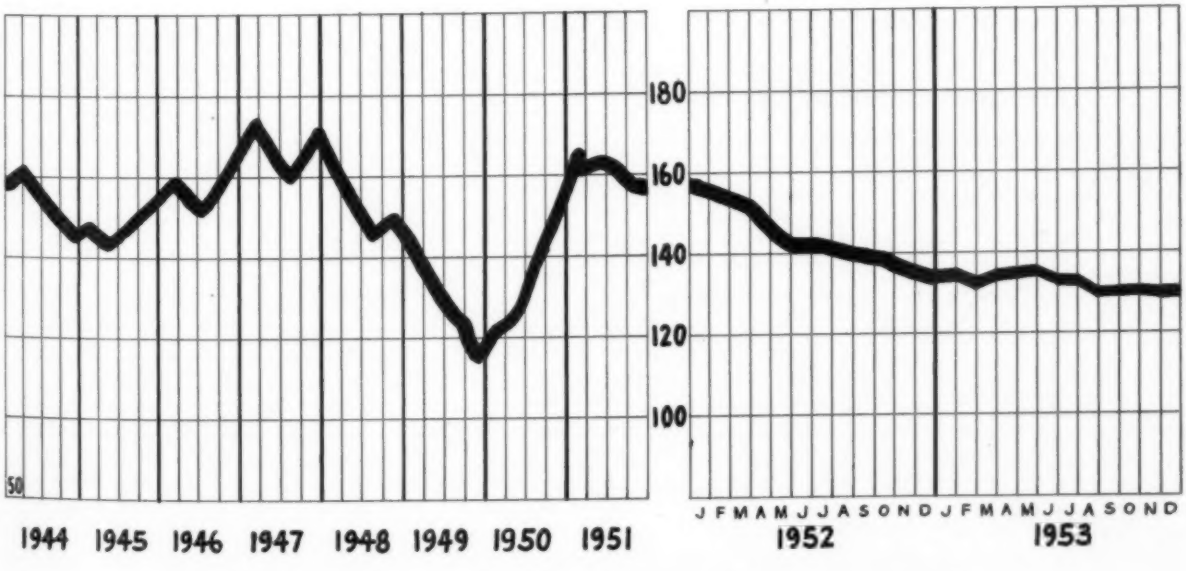
Balsam Tolu Higher

Balsam tolu has been advancing in price for some time at the origin and has continued to reflect that trend on the spot market, where it is now selling for $3 a pound. Some lots are going for as high as $3.25.

Balsam Peru Firmer

Balsam Peru is said to be getting very firm at the origin, although there has been no evidence of it as yet in domestic prices. One botanical house has indicated that an increase can be expected in the near future. Because there are such large stocks on spot at the present time, these are selling at regular prices. Dealers apparently are hesitating to advance their quotations for fear of losing sales, but the time will come soon when they will have to make replacements at a higher price.

50 Raw Materials—Weighted Price Index. 1926=100.



The price index of fifty commodities for December went up slightly from 129.2 to 130.1.

DECEMBER PRICE CHANGES

UP

Balsam Tolu 25c
Citronella Oil, Ceylon 25c
Citronellol 10c
Peppermint Oil, Natural $1.50
Redistilled $1.60
Psyllium Seed, Black 47c

DOWN

Cedar Leaf Oil 20c
Clove Oil 35c
Elder Flowers 12c
Eucalyptus Oil 15c
Ginger Oil $1.25
Jalap Root 4c
Mastic Gum 40c
Papain 75c
Sage Oil, Dalmatian 25c
Wormseed Oil $1

By the end of December, balsam Peru was selling at prices ranging from $1.45 to $1.70 a pound.

Papain Much Lower

Papain prices dropped 75 cents in December and are now being quoted at $5.50, ranging up to $6.25 for the African variety. The Ceylon variety was about $1 lower.

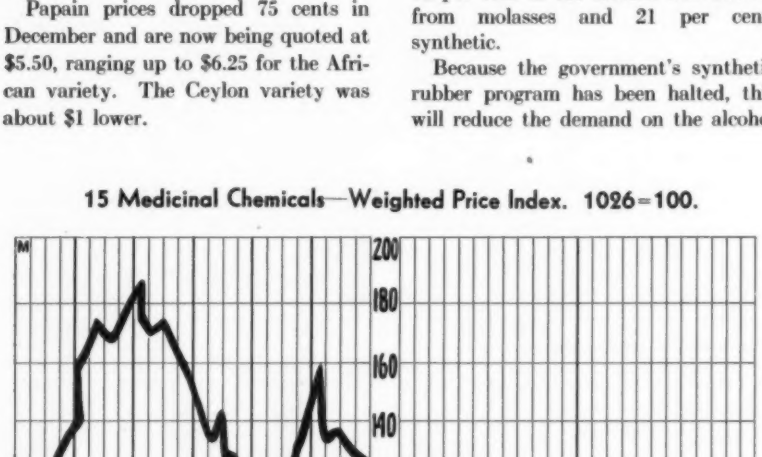
Alcohol Production Up

(*Continued from page 113*)

as compared to 34 per cent from molasses. This was compared to the days before the second world war when 72 per cent of the alcohol was derived from molasses and 21 per cent, synthetic.

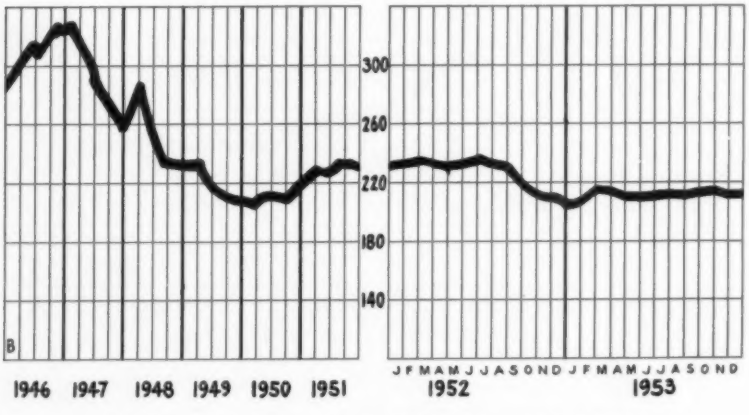
Because the government's synthetic rubber program has been halted, this will reduce the demand on the alcohol market and tend to soften it that much more.

15 Medicinal Chemicals—Weighted Price Index. 1926=100.



The medicinal chemicals index remained at 104.1. There were no changes.

15 Botanicals—Weighted Price Index. 1926=100.



The botanicals index went up slightly from 212.2 to 212.9. Balsam tolu was higher.

Tartaric Acid Fairly Active

Demand for tartaric acid was on the sluggish side last month, as might be expected for this time of the year. Both the domestic and imported stocks were holding to their former prices, with the domestic selling for 38 cents a pound, and the imported, for 31 cents a pound. Spokesmen indicated that there were sufficient stocks on hand to take care of all requirements.

Psyllium Seed Much Higher

Prices advanced very abruptly on psyllium seed last month because of a lack of material at the origin. It was being quoted at 75 cents during the first week in January.

Cocoa Butter Up

The price of cocoa butter continued to advance last month and went up to $1.18 a pound.

Ergot Steady

Ergot demand was sluggish last month, with the price remaining between $3.75 and $4. Stocks were said to be sufficient to handle all demands at the present time.

Cantharides Wax Unchanged

Prices of cantharides wax remained the same last month, with the demand being reported on the quiet side. The Russian material was selling at $4 a pound, and the Chinese, at $2.

Citronellal Increased

Probably as a result of higher citronella oil prices, the quotations on citronellal advanced to $2 a pound. Whether or not a further increase will be felt in the coming months is said to depend largely on demand for the item, coupled with the course that citronella oil takes.

Citronella Oil Firmer

Citronella oil has been rather constant in price over the past few months but went up sharply during the latter part of December. It had formerly been priced between 55 and 65 cents for the Ceylon material, but this is now higher and in the range between 80 and 90 cents a pound. The oil is expected to remain firm for some time to come owing to conditions at the origin.

The lower prices that have been in

effect for quite some time have had a depressing effect on the Guatemalan market, with the result that production of citronella oil has been reduced in Central America because that area was unable to compete with the Far Eastern prices.

The danger now is that, should the Ceylon material become too high priced, and should it become scarce, there will not be enough Guatemalan oil to take care of all needs. It is much too early, however, to determine whether or not this will occur.

Citronellol Higher Too

Also because of citronella oil, citronellol has climbed in price and is now being quoted at $2. Sources in the trade have expressed the opinion that these items will remain on the firm side for some time to come.

Lemon Oil Remains Firm

California lemon oil continued to be quoted from $7.25 to $7.65 a pound last month, with a large amount of the oil being bought near the upper end of the range.

Although the Italian oil is priced lower at $6.50 a pound, and extending up to $10, there is not enough of this oil to supplement the California material. Spokesmen indicate that Italian sources have sold much of their lemon crop as fruit to European countries, thus cutting down on the available oil supply.

This has diverted much of the Italian oil business to Argentina where W. Sanderson & Sons is pricing the material at $8.25 a pound.

Clove Oil Still Lower

Clove oil continued to fall off last month and, at $6.40 was about $4 under its price of a year ago. Several factors have accounted for the rapid decline in this oil. Economic conditions and crops are more favorable at the origin (Zanzibar) today than they were a year ago. In the United States, many consumers turned to clove leaf and stem oil when they could not obtain the bud oil. In the manufacture of paints and inks, for example, the leaf and stem oils are superior for their purposes, since they buy the clove oil for its eugenol content, which is higher in these oils. The eugenol is used as an anti-oxidant.

Because of the greater use of the leaf and stem oils, there has been more of the clove bud oil to go around. This has alleviated the entire market and has built up the supply of bud oil, with the result that the price has declined considerably.

Peppermint Oil Higher

Both the natural and redistilled peppermint oils were higher last month but appeared to be leveling off in January. The natural material was being quoted from $6 to $6.15, while the redistilled oil was selling in the range between $6.50 and $6.75.

Orange Oil Steady

Up to the first week of January, the prices of orange oil were holding to their previous levels. There was some speculation at that time, however, that the can strike might have an indirect effect on the orange oil supply. Should there be a reduced supply of cans available, the frozen orange juice processors might be forced to sell some of the oranges as fruit to consumers. This would automatically cut down on the number of orange peels from which the essential oil could be extracted.

Caraway Oil Firmer

Although spot prices of caraway oil remained at $2.50 in December, an increase is expected momentarily because of higher quotations emanating from the source. There has been no noticeable increase in demand in this country, but still the pressure has been built up because of a lack of material, mostly at the source of supply.

Eucalyptus Oil Lower

The price of eucalyptus oil declined to 80 cents a pound in December, a move which was probably caused by the lack of buying at the present time. Sources in the trade expect the consumer interest for this oil to pick up either this month or in February.

Geranium Oil Unchanged

There has been very little demand for geranium oil in recent weeks with the result that prices have either held steady or have declined, depending on the seller. Current prices range from $10 to $11 for the African oil, and from $12 to $13.50 for the Bourbon material.

Wormseed Oil Reduced

The price of wormseed oil was down to $6 last month, with prospects of lower levels to come during the first few months of 1954.

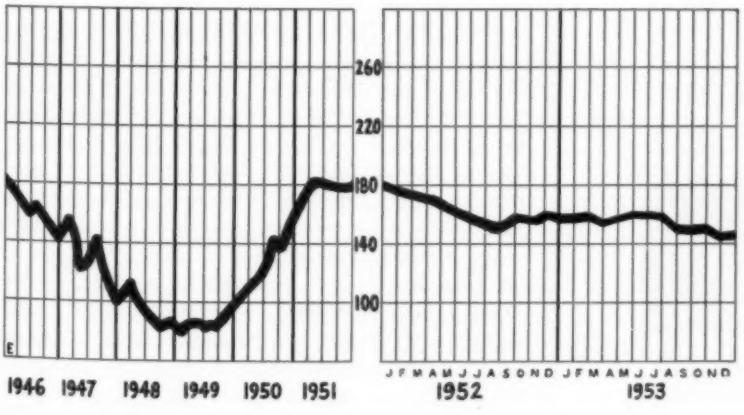
Cedar Wood Oil Steady

In spite of higher replacement costs which have been appearing for cedar wood oil, there have as yet been no changes in the spot market quotations. Up through the first week in January the oil ranged from 50 to 77 cents a pound.

Lemongrass Oil on Edge

This oil as become very touchy pricewise, according to spokesmen in the trade, who indicate that a price increase will occur should there be a step-up in demand in this country. Current level of the oil extends from $1.25 through $1.65 a pound.

15 Essential Oils—Weighted Price Index. 1926=100



The essential oils index advanced from 144.1 to 146.3.
Citronella oil was higher; clove and eucalyptus oils were lower.

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VITAMIN A IN COSMETIC CREAMS AND LOTIONS

(Continued from page 39)

other than skin respond to vitamin A therapy despite the fact that deficiency of the vitamin apparently does not exist in these cases.

It is readily apparent that vitamin A has become a valuable tool for dermatologists who have observed in a general way that epidermal conditions associated with abnormal dryness may respond to vitamin A therapy. Gross[20] has expressed an opinion that the beneficial effect of vitamin A in cases of the ill-defined eruption called "nummular eczema" may be explained by the fact that patients with this disease often have dry skins. Obermayer and Frost[13] are definite in their conclusions that vitamin A represents the only promising mode of treatment in the otherwise intractable dermatoses, pityriasis rubra pilaris, aud keratosis follicularis. This statement supports the work of Peck, Chargin and Sabotka,[21,22] Carleton and Steven[23] and Brunsting and Sheard.[24]

External Use of Vitamin A in Skin Conditions

Topical preparations containing vitamin A have been used for a considerable time in the form of cod liver oil preparations. The effectiveness of such preparations in burns and wounds has been attested to by references in the published literature.[25,26] Since higher concentrations of vitamin A have become possible, the investigators in this field have expanded their efforts and interesting results have been reported.

The question of skin absorption assumes some significance at this stage. Further discussion need not be detailed at this point excepting to point out that it is necessary to consider whether the vitamin is absorbed into the circulation *through* the skin or whether it is absorbed *into* the skin itself. It has been pointed out that the systemic availability of the vitamin from percutaneous absorption is highly controversial. There is better evidence to show that it is absorbed into the skin and remains there locally. The interesting effects reported from topically applied A in large concentrations would be more difficult to explain were it not so.

In all research the small animal is usually the first line of approach. Here the basic physiology may be more readily studied. With topical vitamin A such is also the case. Sabella, Bern and Kahn[3] applied high concentrations of vitamin A alcohol in sesame oil directly to the epidermis of rats and found that it had an effect similar to that reported by Studer and Frey[2] whose experiments, also on rats with oral vitamin A, showed a thickening of the deeper layer of the skin (stratum granulosum) with a resultant decrease in keratin formation and a thinner horny layer. Fell[8] has more recently demonstrated this effect with an interesting tissue culture technique. She has further shown that this anti-keratinizing effect of vitamin A in high

concentrations may go on to a definite metaplasia depending on the concentrations applied and the epidermal tissues involved. She concludes from her work that this vitamin is a valuable factor in the control of keratinization and in the normal animal, a certain amount of the vitamin is required to suppress keratinization. She further concludes that this level varies widely for different epithelia and may further vary for different species.

Flesch[27,28,29] in studying experimental depilatory compounds and vitamin A, obtained results which have led to an entirely different concept regarding the mode of action (anti-keratinizing) of large doses of vitamin A in cutaneous metabolism. The results of these investigations indicate that the unsaturated double bonds in the chemical structure of vitamin A inactive free sulfhydryl groups of epidermal proteins. This interference with sulfhydryl metabolism inhibits keratin formation. Flesch in a series of papers[8,27,29] also presents excellent test-tube and animal experimental evidence supporting this theory. The data indicate that the action of vitamin A in high concentration applied externally must be considered pharmacodynamic. It is of interest to note, however, that human sebum also contains such unsaturated double bonds which may serve normally as an anti-keratinizing agent. This may be more readily appreciated when one considers the fact that human skin tends to become unusually dry and scaly in the winter months when sebaceous secretion is greatly decreased. Similar conditions are observed when skin is exposed to detergents and solvents. Then too certain nodular or blind types of acne may be associated with deficient sebum production. Clinically, these conditions have been reported as having been benefited by vitamin A topically applied.[30]

Flesch[8] reports the benefits derived from topically applied A to a case of severe ichthyosis. An interesting treatise concerning clinical studies of vitamin A in dermatological conditions has been reported by Baer and Vogel.[30] These workers discuss asteatosis (sebum deficiency) as to its causes and also other dermatological conditions. Their conclusions are that precision studies of vitamin A deficiencies of skin diseases are difficult but that clinical improvement was noted after topically-applied vitamin A in some cases of acne vulgaris, ichthyosis and dryness of the skin.

Using the concept of Flesch[27,28,29] regarding the mechanism of action of vitamin A, Baer's and Vogel's[30] results are not at all surprising. They become more significant to cosmeticians when considering that in their two formulations (50,000 units per ounce and 75,000 units per ounce) they were actually in the range of what now are considered to be cosmetic potencies (1,000-5,000 units per gram or 28,350 to 141,750 units per ounce). The results might have been more pronounced if higher concentrations had been used, since their cases were undoubtedly pathological.

It is well at this time to mention that the pharmacodynamic action theory of Flesch,[8,27,29] however, logical,

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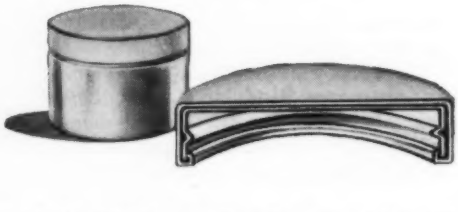

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has not completely supplanted the older views. Wise and Sulzberger[31] in 1941 suggested that patients without obvious vitamin A deficiencies may in effect be suffering from local cutaneous hypovitaminosis. The term "dysvitaminosis" has been used for such postulated conditions.

Vitamin A Absorption Through the Skin

(Literature Review)

The question of whether vitamin A is absorbed through the skin is important if one assumes that the actions noted on skin are indirectly dependent on its systemic effect. Also, it may assume significance if absorption is sufficient to produce overdosage of the vitamin. Hypervitaminosis A from parenterally and orally administered vitamin A is certainly possible. The syndrome arising from such overdosage of the vitamin has been reported by many and need not be described here.

Jansen and Helmer[32] in 1937 noted an increase in weight in vitamin A deficient rats after eight days of rubbing halibut liver oil containing 2,350 U.S.P. units of vitamin A per 0.05 cc. The weight gain began 2-4 days after treatment was started and continued rapidly even after the application had been discontinued for some time. Eddy and Howell[33] obtained similar results in 1939.

Baer and Vogel[30] conducted experiments on human skin treating various dermatological conditions with vitamin A locally applied. An attempt was made to correlate clinical improvement with biophotometric readings. In some cases corresponding improvement was noted. However, these authors conclude that the biophotometer is not an instrument of precision in the study of vitamin A deficiency of skin diseases.

Sobel and Rosenberg[34] recently compared the measure of effectiveness of vitamin A applied externally and administered orally to rats and found the local application about one-seventh as effective as the oral in overcoming vitamin A depletion and promoting growth.

On the other hand, De Ritter and Marusich[35] failed to observe any significant increase in the vitamin A content of rabbit livers and subcutaneous fat after ten daily applications of 0.5 gm. portions of cosmetic creams ranging in potency from 2,500 to 15,000 U.S.P. units per 0.5 gm. Some increase was noted in the vitamin A content of the skin itself.

De Ritter and Jahns[35] in humans also noted no increase in plasma vitamin A after the application of a carbowax base ointment containing high concentrations of vitamin A.

It is apparent that differences may arise depending on the species used for experimentation. Also, in animal work it is difficult to determine to what degree the animal ingests the preparation by licking the skin. There may be other explainable differences depending on whether vitamin A deficient animals were used or not.

It is clear that even if one-seventh of the vitamin A in a cosmetic preparation contaning 5,000 units per

gram when applied topically, were absorbed by the skin,[34] overdosage would be extremely unlikely. Doses of 100,000 units daily by mouth have been prescribed by dermatologists and taken by patients for acne without any reported overdosage. Published literature contains no reference to hypervitaminosis A following the local application of vitamin A.

Cosmetic Considerations

The results, both laboratory and clinical, warrant at least some rather general conclusions. Vitamin A, whether taken systematically or applied locally has proved to be useful in combating certain skin disorders which are characterized by dryness, scaliness and roughness. These responsive conditions need not be definitely due to a lack of proper diet but may exist as such without being classified as pathological. These abnormal conditions may further be aggravated by exposure to the elements and by detergents commonly used daily. These factors alone may also produce similarly appearing conditions due to the relative suppression of such normal substances as sebum.

It is also clear that the results obtained from vitamin A in a cosmetic cream or lotion may not be due to a systemic vitamin effect. Any claims for a vitamin effect should, therefore, be made with reservations. All claims for activity should be based on available supporting biological and clinical data. The effects obtained will depend also on the concentrations used. Dosages from 1,000 units upward have proved beneficial. It should be noted that daily application of doses beyond 5,000 units per gram should be avoided for cosmetic purposes until data have been secured to provide assurance of the safety of higher concentrations when applied routinely.

Synthetic vitamin A palmitate-Roche is available in concentrations of 1,000,000 to 1,800,000 U.S.P. units per gram. This high concentration permits the incorporation of 1,000 to 5,000 U.S.P. units per gram or 28,350 to 141,750 units per ounce by simply dissolving the vitamin concentrate in the molten stearic acid or the fat and oil of the formula. Commonly used antioxidants are employed to stabilize the vitamin activity during shelf-life of the preparation. Vitamin stability tests on new formulae are necessary before commercial distribution is considered. Chemical methods for determining the vitamin A content of cosmetic products have been developed. Special formulae for vitamin A-containing cosmetic creams and lotions are not necessary. A new cosmetic formula containing vitamin A should be observed in numerous applications on normal and dry, flaky skin of many people before considering commercial distribution of the product.

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PITFALLS IN PRODUCT DEVELOPMENT

(*Continued from page 41*)

offered a patented disposable syringe with a capacity of 1 cc. and they wished to determine its market potential. Their Sales Department arranged for a test on two products, which we may call A and B. A was a cardiac glycoside, usually administered by mouth, and B was a vitamin preparation, usually administered in doses of 2 cc. or more. Needless to say, the tests showed that these products were not marketable and the Sales Department concluded that they had better not go into this new syringe. This illustrates the danger of a poorly conceived market study and the ease with which the wrong conclusions can be drawn from its results, causing the company to pass up what might have been a profitable new field of activity. When product development is guided by such unreliable data, it cannot produce the most effective new products.

2. Fundamental Research

A. *Chemistry.* In working on the development of compounds which might be useful as anticoagulants, the Green Laboratories had finally, after several years, learned how to make a substance which had definite anticoagulant properties. The pharmacology and toxicology of this substance was worked out and clinical investigation indicated that it was an effective anticoagulant. Case histories, together with the chemical and control data, were presented to the Food and Drug Administration who pointed out that there was inadequate control of molecular size, so that one could not be certain that successive batches would have the same relative molecular-size relationships. Studies of this problem by the use of modern ultracentrifuge equip-

ment revealed that the difficulties of maintaining batch uniformity were all but insurmountable and this contributed to the eventual abandonment of the project. This illustrates the importance, in fundamental chemical research on new substances intended for therapeutic agents, of examining all possible pertinent properties by the most advanced quantitative methods and not neglecting any aspects because of the pressure of time or other considerations. Had the problem of molecular size been studied carefully earlier, the project might have been dropped before the expensive clinical investigation which led to its ultimate downfall. The failure to make the fundamental chemical work sufficiently broad to reveal weak points is a daily pitfall which has been responsible for much useless expenditure of time and money.

B. *Pharmacology and toxicology.* During a toxicologic study of an antibiotic product, the Brown Co. found what it thought to be pathological changes in the livers of white rats. They abandoned the product because of this. Later, Green Laboratories prepared to market an identical product and, when they heard of this, Brown Co. brought their toxicologic data to the attention of Green Laboratories who found, after an exhaustive study on several species of animals, that the liver changes in the white rats had been artefacts, related to sex and nutrition, and had nothing to do with the antibiotic. Thus, Green Laboratories marketed an effective and profitable product and the Brown Co. lost an opportunity. This illustrates the importance of carrying out pharmacologic and toxicologic investigations on a sufficient number of animals in a sufficient variety of species and having good controls. It was the presence of the liver lesions in the controls which showed, in the above illustration, that the antibiotic had nothing to do with their presence.

C. *Human applications.* The difficulties in carrying over from the results on one species to predict the action of drugs on other species are well known. To illustrate this point, a professor of physiology in a medical school used to tell the story of the physician who had as valued and lucrative patients two wealthy elderly sisters. One day they met their physician on the street and told him they were going on a long train trip with their beloved pet cat, Tabby. They asked him to do something about Tabby who usually got excited on trains. Although he was secretly offended at being asked to treat their cat, the physician promised to give Tabby an injection before train time. To make certain that Tabby would be quiet on the train, he injected morphine and it was not until somewhat later that he happened to note in a book that morphine, unlike its action in humans, had a marked excitatory effect on cats. At this point, he felt he had lost the two sisters as patients and expected not to see them again. However, some months later he met them on the street and they told him they had been looking for him to thank him for the fine job he had done on Tabby. It seems the conductor was just about to object to Tabby when she flew out of her basket and attacked the Conductor

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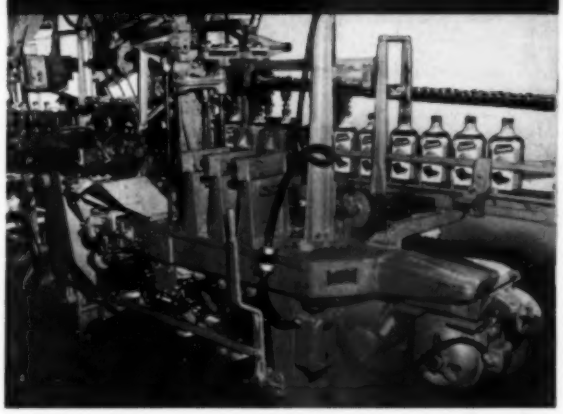

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so that he did not bother them again for the rest of the train trip. Tabby had never displayed this type of courage before and the sisters had much praise for the physician's good judgment in treating Tabby.

3. Dosage Form Development

A. *Selection.* In developing a veterinary dosage form of an antibiotic product, the Brown Co. decided upon a preparation containing 300,000 units per cc. in suspension, since the human dosage form which had been previously marketed contained this concentration. The product was issued in 1 cc. vials and it was found that this concentration had been a serious mistake since the directions for use of the product called for a dosage of 100,000 units per animal and, while it would have been easy to estimate half a cc., it was practically impossible for the farmers who were using this product to measure out one-third of a cc. accurately. The product met with much sales resistance until the concentration was changed to 200,000 units per cc. This illustrates the tremendous importance of selecting the dosage form to satisfy all of the requirements for administration of the drug. A common error is the marketing of too low a concentration, thus requiring administration of too-large volumes, or too high a concentration, making it difficult to measure out the desired dose, or necessitating much waste in throwing away a portion of each ampul or vial. Only by a comprehensive knowledge of the use of a drug can these pitfalls be avoided.

B. *Testing.* Again we shall draw upon a veterinary illustration in a problem concerning the need for testing a drug after it has had a chance to age for a while, and not restricting the testing to the period immediately after the batch is made, as is so often the case where the Sales Department is pushing Product Development for an early marketing date. The Brown Co. had developed an antibiotic suspension for veterinary use and had found that the material, on testing soon after the batch had been made, was easily withdrawn into a syringe from the vial and easily injected. However, through a combination of circumstances similar to those which you have undoubtedly experienced in your own company, this material which had been rushed to production was allowed to remain on the shelf for six months before it was investigated in the field. At this time it was found that the product had changed on standing and could no longer be easily withdrawn from the vial into the syringe. A further pharmaceutical study showed that the concentration of antibiotic was in excess of that which could be depended upon to remain sufficiently fluid for a long period of time. When the concentration was subsequently reduced somewhat an excellent product was produced. This illustrates the obvious fact that knowledge of what happens after six months or one year can only be obtained by examination after six months or one year. While some laboratories may be lucky enough to get by with abbreviated test periods, the day of reckoning is always just around the corner

and it is much better, in the long run, to make the testing program completely safe by devoting adequate time to it, despite the usual pressures.

C. *Transition to production.* There is hardly a single company which has not had the experience at some time in its history of finding that the beautiful product, which it had developed and tested in laboratory size batches, could not be faithfully reproduced on a large scale. Something had gone wrong which had not been anticipated. There is only one way to avoid this pitfall and that is for the development laboratory to be constantly conscious of the production laboratory's facilities and limitations. Before the development of a dosage form is begun, the particular problems of that production should be studied in relation to the eventual materials and equipment which will be available for large-scale production. This problem alone could well be the subject of a separate paper, and it might be well for laboratories to exchange their experiences in this regard so that the misfortune of the one might be the guide of the other.

4. Clinical Evaluation

A. *Investigative program.* Perhaps no single part of the developmental program is more fraught with pitfalls than the nature of the investigative program by which the merits and demerits of the product are established. Because of the frailties of human nature, and we must remember that physicians are people first and physicians afterward, it is essential that those who are asked to carry out a clinical investigation of new drugs be provided with some sort of guide to indicate the salient points which they should cover in their records. This is best done in the form of a carefully prepared record sheet which must be calculated to provide maximum convenience for the busy clinician. Of course, the actual choice of the physician, and the communication to him of the essential nature of the product he is about to investigate, are of paramount importance. Too often, because of the hasty selection of clinicians who are not interested or too busy to do a thorough investigative job, and because of the lack of adequate report forms and proper information about the objectives of the investigative program, many months, or even years, of investigative effort may result in a hodge-podge of meaningless data which have only a remote relation to the basic problem. Indeed, it would be possible to devote many volumes to the criteria for selection of competent investigators and the discussion of appropriate and valid investigative techniques. Suffice it to say here that each organization which develops new products must have on its staff, or have access to, someone who understands the problems of investigative work and the tremendous number of pitfalls with which such work may be beset.

B. *Interpretation of results.* Unfortunately for the ultimate success of many investigative programs, the interpretation of clinical data requires not only a thorough knowledge of scientific medicine, but it also requires an art and skill which is all too rare. The ability

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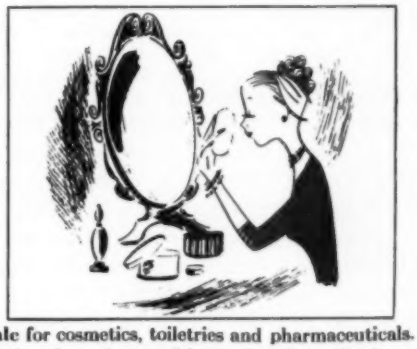

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to determine whether adequate types and numbers of patients have been utilized and whether adequate controls have been established is the product of long experience in this type of work and can only be acquired in this way. If this ability is not present, it is very easy to derive almost any desired meaning from a set of clinical data. Unfortunately there is always a denouement which may come after much damage of a medical or commercial nature has been done. It is impossible here to give an exhaustive exposition of the basic principles required in the analysis of laboratory or clinical data and, probably, even if all the words are said, it still remains for experience, common sense and a good character to provide the real answers. The important point, in our discussion of pitfalls, is to recognize the possibility that a complete and expensive research program may fail to yield the desired practical results because of an ill-conceived or poorly interpreted clinical investigation.

5. Labeling and Packaging

A. *Labeling text.* The preparation of the labeling text requires a thorough understanding of the technical and medical facts about the product, as well as a knowledge of the trade-mark problems involved, if any. Choice of the wrong name for a product may wreck it, and a name may be wrong by virtue of a wrong connotation, difficult pronunciation, confusion with names of other products, and infringement of existing trade-marks. This latter may not be found out until well after the product is on the market and may involve an expensive scrapping of promotional material as well as an expensive relabeling problem. At best, it may mean a forced agreement, sometimes very expensive, with the holder of a previous trade-mark. This subject is, of course, like most of the others which have preceded in this discussion, a good candidate for the many volumes which have been written and will be written about it. The omission of an important storage caution or the use of the wrong route of administration may likewise help to wreck the product. Every word on the label is a potential force for good or bad product acceptance depending upon whether it is correct or not. There is no one in this group who has not, at some time, felt the adverse effects of labeling errors. To err is human, and sometimes it appears we may be too human. Avoidance of the pitfalls of inaccurate or misleading labeling must depend upon a broad knowledge of the problems involved and the objectives to be attained, as well as such technical matters as government regulations.

B. *Pakage development.* Our friend, the Brown Pharmacal Co., had been issuing an injectable product in amber ampuls for many years. Suddenly they received reports that a particular batch of the product was producing toxic effects. They engaged in an extensive and expensive recall program and then began to search for the reason. They finally found that manganese was leaching out of the amber glass. Then, after further investigation, they found that the glass had been made from a special cullet which had been used for its manganese content during a period when fresh manganese was difficult to obtain. This cullet had been specially processed to release the manganese in the glass manufacture. With such an unanticipatable pitfall, is it any wonder that packaging errors, defective materials, poor judgment in selecting containers or closures, etc., can be the source of fatal consequences? Let us leave this subject with a healthy respect for the good or bad part it may play in the launching and acceptance of a new product.

6. Integration of All Development Activities

A. *Satisfaction of all requirements in all departments.* Again, our friend the Brown Pharmacal Co. had a Sales Department which decided that its latest product had to be issued in a purple bottle, shaped like a sailboat. The reason for this was that the product was intended to prevent motion sickness. There being no coordinating agency in this company, and the Sales Department's wishes being regarded as supreme since they bring in the income (don't they?), the packaging development group decided to get this type of bottle on a special mold. They did this and (you have guessed it) the production department found that they could not label it at all. This is, of course, an exaggeration of what actually occurs but it may not sound so far off to some of you. The important point about this is that failure to consider the requirements or limitations of any department concerned in the entire development process may prove disastrous. The chain is no stronger than its weakest link (to continue our tradition of trite phraseology). Obviously, to determine what the needs and problems of each department are, and to provide final specifications which take all of them into account, requires a well-organized coordinating activity, headed by a person who has had more or less experience of some sort with each of the departments concerned. He must be able to understand their language and see their problems. The extent to which he and his product development coordination can do this will often determine the final success or failure of the entire development program.

B. *Issuance of specifications and information.* After the various departments have been satisfied, all of the decisions must be translated into a specification which must go to all those who need this information for their operations. The accuracy of this specification information, and the timing which is used in its preparation and issuance are further factors in the ultimate success of the new-product program. Again, the preparation and issuance of this information can be done successfully only by an individual who, like the one just mentioned, has a comprehensive, overall understanding of the entire developmental process.

In the foregoing discussion, an attempt has been made to show, chronologically, the many possible reasons for failure of a product development program. It has been impossible to do more than to make a few remarks about each pitfall and even the illustrations

may not have been the best in each case. However, it is hoped that this compilation of some of the pitfalls will serve to emphasize the amazement with which each successful new product must be regarded, and perhaps to indicate some of the steps which may be taken to avoid these ubiquitous obstacles.

CHOLESTEROL

(*Continued from page 53*)

for mixtures of the two materials, although they promote opposite types of emulsions on their own.[161]

With both present in the aqueous phase, inversion of emulsion takes place at a cholesterol/Lecithin ratio of 1:8. If, however, experiments are commenced with cholesterol in the oil phase and lecithin in the aqueous phase, the inversion ratio is between 1:1 and 2:1. The following table further illustrates this.

The Effect of Cholesterol-Lecithin Mixtures on Emulsions

Volume of oil phase cc.	Volume of aqueous phase cc.	Per cent Lecithin	Per cent Cholesterol	Ratio Lecithin / Cholesterol	Continuous phase
5	6.0	0.33	0.017	19.4	Water
5	5.5	0.18	0.018	10.0	Water
5	5.4	0.148	0.0185	8.0	Indefinite
5	5.3	0.113	0.019	6.0	Oil
5	5.2	0.077	0.0195	4.1	Oil
5	5.1	0.04	0.002	2.0	Oil

A mixture of cholesterol and its stearate is said to be useful for inhibiting the evaporation of water from exposed oil-in-water creams, but in connection with the evaporation of water through unimolecular films, it has been found that cholesterol offers little resistance to the transmission.[12]

The permeability of artificial membranes toward water and toward fat-insoluble dyes is increased by cholesterol.[67]

Cholesterol and the Skin

The significance of cholesterol is of great interest in the sphere of skin therapeutics, and there appear to be relatively few conditions in which its use is definitely contra-indicated, although its biological activity can no doubt be exaggerated and has in fact been called into question.[150]

Cholesterol preparations are reported to be neither primary irritants nor sensitizers and hypersensitivity to cholesterol is rare, although allergy to its esters and some eczematous hypersensitivity to lanolin has been reported.

These few cases must, however, be compared with the apparently satisfactory use of millions of jars of preparations containing cholesterol or its esters and lanolin, regularly sold throughout the world.

The function of cholesterol in the organism, and the proper use in cosmetics of the material which is certainly concerned with the emission and absorption of water by the skin, have often been discussed, and it is known that the transportation of water-insoluble material such as the fats, proteins, etc. within the body is achieved by recourse to emulsions in which cholesterol

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The vicious response of the Russians to Ike's proposal for Atomic Energy control was not completely unexpected. The last time the Russians agreed with us was when we thought they should get Lend-Lease aid.

•

The Russians, Stalin variety or Malenkov, aren't really stubborn, just misunderstood in their pride. They're like the patient who permitted the dentist to extract every tooth because he wouldn't give the doctor the satisfaction of telling him which one really ached.

•

Misunderstanding the Russians is really a simple thing to do. After nearly 35 years as a Communist nation they're still disputin' Rasputin instead of learning to like Ike. Dreaming about the Socialist World of Tomorrow, they're still fighting the nightmares of the past.

•

While the President's speech on international control of Atomic Energy wasn't too great a variation of Bernard Baruch's old United Nations proposal, it had more historic significance. It made the Soviets sound just like Southern anti-New Dealers in screaming, "Damyankees".

•

The real solution to the end of the International Armaments Race is harder to find than a politician with something to say. There are some people who think war can be ended only if the leaders of the world continue to discuss the problem. But there are those cynics who insist that's the way it starts.

•

One of the ironies confronting President Eisenhower in his Bermuda conference with Premiers Churchill and Laniel was the fact that he found more allies out of the country than in his own party.

•

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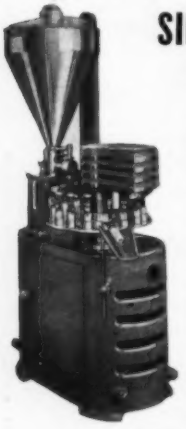

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and related compounds act as the emulsifying agent.[39]

The majority of true fats contain only minute traces of cholesterol, but the substantial fatty layer on the surface of the skin which has important physiological functions in regulating the permeability and water balance in the cells, is composed, to a large extent, of esters of fatty acids and alcohols of high molecular weight, including cholesterol and related lipoids, triglycerides and unsaponifiable matter.[39]

The average analysis of sebum has been calculated to be as follows:

Unsaturated Fatty Acids	**20 per cent**
Saturated Fatty Acids	**10 " "**
Triglycerides	**25 " "**
Waxes, etc.	**25 " "**
Cholesterol (free combined)	**5 " "**
Hydrocarbons (inc. squalene)	**15 " "**

Cholesterol has a stabilizing influence on the emulsion present in dermal tissue and this action tends to render the skin more or less impermeable to water.[127]

In healthy skin it is secreted by the sebaceous glands at the foot of the hair follicles, and if constitutional disturbance of the organisms due to illness results in cholesterol deficiency at this site, external application of cholesterol is said to restore the normal condition.[121]

It is reported that the alcohol forms a protective coating for each cell, and that the enrichment of the horny layer of the skin with cholesterol prevents drying of the elastic cells and promotes their flexibility.[22]

There is reported to be a daily excretion of skin fats through and on to the skin of humans of the order of 250-600 mgms. (10-25 per hour). The skin of man contains a greater amount of cholesterol than does that of woman.[62,163,184]

It has been shown that strong sunlight causes a rise in the cholesterol and cholesterol ester content of the skin of rabbits, the water content also usually increasing in the same local area. White rats kept in the dark have shown a lessening of the cholesterol content of their skin.

The proportion of cholesterol in the human skin also increases on exposure to the sunlight to up to 150 per cent, and various parts of the face may contain two to seven times as much cholesterol as skin from the abdomen of the same person, the distribution in the facial skin being also roughly proportional to the relative degree of exposure to the sun, e.g. nose > cheek > forehead.

In the histological examination of changes occurring in cholesterol and fatty acids and cholesteryl and glyceryl esters during resorption by the skin, it has been found that resorption was highest for the sterol and lowest for acids. An interesting biological fact about the cholesteryl esters is that there is very little of these in tissues where cholesterol occurs chiefly in the free state, but that in the blood a higher proportion is found of the esters than of the sterol.

The greater portion of higher unsaturated acids of the plasma circulates as cholesteryl esters.

The fact that the main components of the fatty layer of the skin contains cholesterol, lecithin and unsaturated acids, has led to the suggestion that skin creams should contain these ingredients in the same ratio as they occur naturally.

The general title, "Biological Creams," is in fact given to those cosmetic preparations which contain active materials which are understood to have a regenerative action on the skin.[137]

The function of the active principles is intended to provide artificial nutrition of the skin, in order to reduce subcutaneous facial cellular atrophy, caused by age or premature atrophy of the secretory glands.

This artificial nutrition of the skin is effected by means of the essential regenerative elements, cholesterol and lecithin, counteracting the insufficient glandular secretions of these two substances.

To produce such benefits, creams containing cholesterol and lecithin are used directly and the percutaneous application is also carried out with hormones or vitamin preparations capable of bringing about the normal state of the subcutaneous glands, via their stimulating action on the secretion of these two substances.

The following formulations are a selection of such primary nourishing creams; such creams being described also as skin creams, tissue creams, regenerative creams.

Components (All parts by weight)	1	2	3	4	5
Beeswax	60	50	50	85	20
Spermaceti	10	5	—	—	—
Stearic Acid	50	45	30	55	—
Lanolin	60	50	20	50	10
Cocoa Butter	40	15	20	50	20
Arachis Oil	180	200	130	100	230
Cholesterol	12	15	6	12	3
Water	170	180	350	1200	100
Borax	10	12	4	—	—
Sodium Benzoate	1.5	2	3	2	2
Cetyl Alcohol	—	15	—	—	—
Beef Marrow Fat	—	30	—	—	—
Egg lecithin	—	2	12	—	—
Sodium Methyl p hydroxy benzoate	—	0.3	—	—	—
Diglycol Stearate	—	30	—	—	30
Benzyl p hydroxy benzoate	—	—	1	—	—
Triethanolamine	—	—	—	25	—

Cholesterol can be easily diluted in a fatty medium for use on the skin, allowing greater amounts to be used than would be possible, for example, with alcoholic solutions. Skin "tonics" may contain up to 1.5 per cent of this sterol, but greater proportions can be used, and even concentrated suspensions of cholesterol in a fatty base are claimed to be effective.

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Formulations for hormone cosmetic preparations which have appeared, include the following:

Components, parts by weight	1	2	3	4
Beeswax	12.5	12	18	—
Cocoa Butter	5.0	—	9	—
Cetyl Alcohol	4.5	—	2	40.0
Olive Oil	50.0	—	—	—
Soya Lecithin	1.0	—	—	—
Cholesterol	0.5	1	0.8	10
Estradiol Alpha	2300 I.U.	—	—	400000 I.U.
Preservative (*p*-Hydroxybenzoic Ester	0.1	0.1	0.1	2.5
Borax	0.5	0.5	—	—
Perfume	1	1.0	1.0	—
Water up to	100	100	100	2000.0
Petroleum Jelly	—	30	—	—
Spermaceti	—	5	—	—
Lanolin	—	7	—	98.0
Estrogen	—	20000 I.V.	—	—
Liquid Paraffin	—	30	45	862
Sodium Benzoate	—	1.0	1.0	—
Vitamin D	—	—	1000 I.U.	—
Estradiol Benzoate	—	—	2500 I.U.	—
Hydroquinone	—	—	0.1	2
Almond Oil	—	—	—	—
Vitamin F. (millions of Sh.L. units)	—	—	—	5
Medium Fatty Cream Base	91.5	—	87.0	—

The manner of utilization of cholesterol in cosmetics in general is indicated by the formulations in the table at the bottom of the page.

Cholesterol has been indicated as suitable for inclusion in anti-sunburn preparations because of the tendency to produce Vitamin D_3 in the skin subjected to sunlight.[82]

It has been stated on the other hand, however, that the presence of cholesterol which has been rubbed into the skin, causes an increase in erythema produced upon exposure to ultra-violet light and prevents pigment formation, a later effect of ultra-violet irridation.[182]

With regard to the packaging and storage of cholesterol water-in-oil emulsions, it is of interest to note that some creams made with cholesterol as emulsifier are often sensitive to glass-container surfaces, but remain perfectly stable to metal surfaces.[78]

A powdered washable ointment base may be prepared from:

Polyglycol 4000	**236.0**
Sodium Stearate	**236.0**
Stearic acid	**468.0**
Cholesterol	**11.8**
Sodium lauryl sulfate	**47.2**
Methyl Paraben, U.S.P.	**0.48**
Propyl Paraben, U.S.P.	**0.25**

The influence of cholesterol as an emulsifying agent, on the antiseptic activity of certain dermatological preparations has been investigated.[209] Water-in-oil emulsions containing the antiseptics were tested using the F.D.A. Agar Cup-plate Method of evaluation.

The formulations employed containing cholesterol were:

Components per cent parts weight	1	2	3
Stearyl Alcohol	15	12	15
Beeswax	40	32	39
Lanolin	75	60	73
Petroleum Jelly	365	291	356
Water	500	405	487
Cholesterol	5	—	—
Absorption Base	—	200	—
Wool Wax Alcohols	—	—	30

The next table gives the Agar Cup-plate zones of inhibition for each medicated preparation. The figures given for concentration of medicament are in per cent unless otherwise indicated. The zones were measured from the edge of the cup to the perimeter of the zone.

Medicament	Concentration	Zones of inhibition, min. for each base		
		Base 1	2	3
1. Control	—	0	0	0
2. Ammoniated Mercury	5	7	8.5	9
3. Iodoform	10	2	8	2.5
4. Benzoic & Salysilic Acid	12:6	—	7	7.25
5. Sulfathiazol	5	0	0	0
6. Chrysarobin	6	0	0	0
7. Sulfamerazine	5	0	0	0
8. Resorcinol	6	—	0	—
9. Yellow Mercuric Oxide	2	6.5	6.75	6.5
10. Tyrothricin	0.5 mgs/Gm	0	0	0
11. Iodine & Pot. Iodide	4:4	15	11	12.5
12. Cryst. Penicillin G.	500 v/Gm.	11.5	11.5	10

Wool wax alcohols contain approximately 30 per cent free cholesterol.

With ammoniated mercury or phenylmercuric nitrate ointment containing cholesterol, a greater antiseptic power, tested by the agar-cup method than with that of the normal U.S.P. preparation is produced.[211]

CHOLESTEROL IN COSMETICS

Components / Cosmetic	Acne Cream	Anti-Sunburn Cream	Anti-Sunburn Oil	Anti-Sunburn Oil	Barrier Cream	Barrier Cream	Beauty Milk	Brushless Shaving Cream	Cleaning Cream	Cleaning Cream	Cleaning Cream	Cold Cream	Cold Cream	Cold Cream	Dry Scalp Tonic	Face Lotion	Hair Combing Cream	Hair Cream	Hair Cream	Hair Cream	Hair Tonic	Hair Tonic	Hair Tonic	Hair Tonic	Hand Cream	Hand Cream	Hand Cream	Hand Cream	Massage Cream	Nail Softener	Nail Softener	Nail Softener	Night Cream	Night Cream	Nourishing Cream	Nourishing Cream	Nourishing Cream
Alcohol	10																						90				5										
Ammonia (10 per cent)					0.5										75	6																					
Beeswax					12	5			2.5	3		6	8	3.7											16			10		12	22	12	20		15	18	5
Borax												4	1				0.5							5	1			0.8	1		1.5	1.5	1	2	1		
Ceresin wax																									10				15								
Cetyl alcohol						6	1	2	10.0	9								13	13						6	—	2	5				3			2	5	
Chloroform	6																	5	3																	
Cholesterol	4	10	3.5	0.5	1	1	1	1	5	0.5	1	2	1	0.8	0.5	0.5	1.0	2	1	1	0.5	0.5	0.5		2	1	1	0.5	0.5	0.5	1	8	0.3	2	2	2	1	0.1	1
Cocoa Butter						5						6	4				0.1													10						5
Propylene Glycol Monolaurate																3																				
Propylene Glycol Monostearate					12						5																										
Estradiol Alpha																																					
Glycerine	10						2		2.0	2					5.3	5				5	2.5	30	50		10	10											
Hydroquinone																																					
Absorption Base		5			6	6					6	6	10				0.5	10	5	5					5				10	15	15	32	30	50	15	2	5
Isopropyl Alcohol																					100	66															
Lecithin	3						1					4	2								0.13				1										1		
Linoleic acid							1																														
Liquid Paraffin			48	46			15	4	39	34	55						3.0	50	27	30					20			40	45	10	30		32	28			15
Oxyquinoline Sulfate	3																																				
Petroleum Jelly						25	—				20			3				10	50	30			50												33		24
Potassium Hydroxide																											0.8										
Sun Screen		4	7.5	3.0																																	
Stearic Acid		2.8				5		20	6.7	6		2	4														14	15									
Sodium Silicate					5				3.5	3				4.6																			10					
Spermaceti											4													5											10		
Sodium Lauryl Sulfate																																					
Sodium Choleate																																					
Sodium Benzoate																																					
Triethanolamine		10					2		3.3	3															3				8								
Vegetable Oil			40	50		20	5	0.2				40	40	28		19									20		5	40			45				46	19
Water	63	100			64	22	70	—	36.0	40	9	30	30	60	9	85	100	100	106	70	30		100	25	60	62	165	30		30	30	21	18	30	22	31	28

Addition of cholesterol to liquid paraffin increases its penetration powers, which are normally very slight.

A mixture of cholesterol, lard and sebum absorbs large amounts of water in the presence of sodium bicarbonate.

Cholesterinated petroleum jelly (10:90) has suggested as a suitable base for eye ointments, with ammoniumated mercury,[134] and aslo as an ointment base for soluble sodium sulfur salts.

A burn lotion consisting of lecithin one per cent, cetyl alcohol two per cent, cholesterol one per cent, triethyl stearate seven per cent, methyl para-hydroxybenzoate 0.5 per cent, mineral oil 18.5 per cent and water 70 per cent, has been recorded.[133]

Cholesterol enters into formulation of barrier creams aimed at the prevention of industrial dermatitis, and the following emollient formulations are typical:

Components, parts by weight	1	2	3	4	5
Glyceryl Monostearate	12.0	—	8	—	—
Cocoa Butter	—	—	—	—	5.0
Beeswax	12.0	—	—	5.0	5.0
Lanolin	6.0	15	—	—	6.0
Cholesterol	1.0	5	0.2	2.5	1.0
Sodium Silicate, Comml. Sol.	5.0	—	—	—	—
Ammonia (10 per cent)	0.5	—	—	—	—
Water	63.5	25	12	30.0	22.0
Petroleum Jelly	—	10	—	26.0	25.0
Cod Liver Oil	—	10	—	5.0	10.0
Cetyl Alcohol	—	5	—	6.0	6.0
Talc	—	10	—	—	—
Grapeseed Oil	—	—	—	5.0	—
Liquid Paraffin	—	22	—	—	—
Hydrogenated Vegetable Oil	—	—	—	5.0	—
Avocado Pear Oil	—	—	—	10.0	10.0

The use of cholesterol on the skin via cosmetics and ointments is related to its use in the related materials, soap and perfumes, and reference may be made to a process for incorporating irradiated cholesterol to impart any beneficial dermatological properties that are possessed by the material.[14]

Irradiated sterols such as cholesterol can be easily incorporated into soap, and soaps containing 10 Vitamin D units per gram have been suggested for preventing rickets.

The opinion is expressed that cholesterol esters may be particularly useful in producing germicidal soaps, tending to increase the absorption of curative agents.[31]

The larger outlet, however, is the use of this sterol as a superfatting agent. Various mixtures have been suggested consisting of cholesterol and cholesteryl laurate and stearate, or the sterol and cetyl alcohol, or white wax.

Even small traces of cholesterol, it is maintained, enhance the cosmetic effect of toilet soaps and cholesterol in an emulsified form, as present for instance in soap lather, imparts suppleness to the dermis. A specific example of a superfatting mixture consists of approximately cholesterol five per cent, lanolin eight per cent, cetyl alcohol 14 per cent. An excess of cholesterol, incidentally, reduces the lathering power to a greater extent than does lanolin.

The possibility that cholesterol might act as a perfume fixative has been suggested. Animal materials of fixation already well known include amber, musk,

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civet, castoreum, ondatreum and yacoral, all of which contain cholesterol.

Cosmetics and Ointment Bases

Cholesterol is widely used as the main emulsifying agent in the formulation of ointment and cosmetic absorption bases suitable for incorporation of all types of medicaments. Some examples of the formulations utilized for this purpose are tabulated in the table following:

Components, parts by weight	1	2	3	4	5	6
Cholesterol	3	10	10	3	10	5
Cholesteryl stearate	3	—	—	—	—	—
Lanolin	25	150	10	—	—	—
Petroleum Jelly	69	730	—	96	90	75
Stearyl alcohol	—	30	—	—	—	—
White Beeswax	—	80	—	—	—	—
Liquid Paraffin	—	—	25	—	—	—
Microcrystalline wax	—	—	5	—	—	—
Cottonseed oil	—	—	—	3	—	—
Arachis oil	—	—	—	—	—	25

The following figures have been quoted as showing the free cholesterol content of some of the proprietary products of this nature.[3] These bases are often used instead of or in part replacement of Lanolin in order to avoid odor and color characteristic of the latter which sometimes develops in ointments, etc., during storage.

Absorption Base	Free Sterol
Aquaphil	18-2 per cent
Cremba	2-3
Aquabase	3
Protegin	1-2
Vogt	8-9
Protegin X	2-3
Eucerin	2-3
Cordulan	5
Laceronium	1-2
Nimco	12
Hydrocerin	21
Almercerin	Trace
Riedel	2
Isocreme	4-5

A five per cent solution of cholesterol in white petroleum jelly is suggested, as an alternative to Lanolin as an eye ointment base,[24] and a water-in-oil emulsion of sulfanilamide in which cholesterol is the active emulsifying agent, is used for impregnating bandages and dressings.

(To be continued)

A.P.M.A. Mid-Year Meeting

(Continued from page 43)

chemical alliance," Mr. Ide contended, adding, in closing, that mergers of this type can be expected in the near future.

The 1953 Scientific Award of the Association was presented to Dr. Paul Dudley White, internationally-known heart specialist who is Clinical Professor of Medicine at Harvard University Medical School. Dr. White was cited for "his many contributions to the progress of medicine and in recognition of his greatness as a teacher, author and clinician." Past president of the American Heart Association, Dr. White served as chairman of American Teaching Missions to Czechoslovakia, Greece and Italy. Awarded the Orders of the Redeemer and Phoenix by the Greek Government, he is also holder of the Czech government's Order of the White Lion. During 1940 to 1946, Dr. White was chairman of the committee on cardiovascular diseases of the National Research Council, and in 1948 was executive director of the National Advisory Heart Council.

The award was presented by APMA president, Michael Francis Charley, and the award winner was introduced by Dr. Harold M. Marvin, Clinical Professor of Medicine at Yale University School of Medicine.

Although cortisone, hydrocortisone and ACTH, when administered to patients with reversible rheumatoid arthritis have achieved dramatic results in many cases, the improvement may or may not be sustained with prolonged administration, and in 80 per cent of such cases relapse will occur when the hormone treatment is discontinued according to Dr. Joseph J. Bunim, chief of the Arthritis and Rheumatism Branch of the National Institute of Arthritis and Metabolic Diseases at Bethesda, Md. No other adrenal steroids studied thus far have antirheumatic properties. What is needed is a steroid whose antirheumatic potency could be increased without increasing the undesirable side effects proportionately.

In his review of research activities in the rheumatic diseases Dr. Bunim stated that the most significant advance made against rheumatic fever thus far as a result of clinical investigation is the demonstration that it is a preventable disease. The finding that the sulfonamides and penicillin were effective in preventing recurrences of rheumatic fever subsequent to streptococcal throat infections was a great advance, he pointed out, but the necessity for daily doses of these drugs for long periods of years may now be made unnecessary by a new form of penicillin which has been studied for the past two years. Dibenzyl Penicillin, a repository type, shows great promise as an effective prophylactic agent which will simplify the effective prevention of rheumatic fever. It now appears, he said, that an intramuscular injection of 1,200,000 units of this new type of long-lasting antibiotic once a month will prevent hemolytic streptococcal infections and even eliminate the carrier state.

The greatest obstacles to the discovery of a chemical cure for cancer have been conquered, said Dr. C. P. Rhoads, Director of the Sloan-Kettering Institute for Cancer Research. As a result, said Dr. Rhoads, cancer research is entering its third and final phase marked by "truly specific cancer chemotherapy." As evidence for this optimism, Dr. Rhoads cited the recent development by Sloan-Kettering Institute of 6-mercaptopurine, a chemical effective in the treatment of leukemia.

Cancer chemotherapy is the selective destruction of cancer tissue by drugs, similar to the destruction of invading bacteria by penicillin. In recent years, cancer

chemotherapy has passed through two phases, according to this report. The first was characterized by the use of chemicals which affected the growth of specific organs, whether normal or cancerous. In this category belong the sex hormones for the treatment of cancer of the breast and prostate.

The second phase was marked by the discovery of chemicals poisonous to both normal and cancerous cells. Some cancer cells are more susceptible to destruction by particular chemicals than normal cells because of their more rapid rate of growth. The nitrogen mustards, TEM, and the folic acid antagonists are chemicals of this type.

Now, for the first time, chemicals are being found that harm cancer cells without harming normal cells regardless of their rates of growth, said Dr. Rhoads. The cancer cells are injured by attacking their newly discovered basic constitutional differences from normal cells. 6-mercaptopurine, is the first of these new chemicals to be used in man.

More optimism about atherosclerosis is justified now than ten years ago. Atherosclerosis is the most common form of arteriosclerosis and is characterized by a fatty deposition with later fibrous thickening of the inner layers of the arteries, according to Dr. Christian B. Antinsen, of the National Heart Institute. This is a progressive process which causes fatal damage by gradually obstructing the arteries of the heart, brain, kidneys, and other body tissues. These progressive changes lead to lack of the oxygen required by these organs, or to peripheral damage caused by the formation of blood clots in the smaller vessels of the heart, brain and kidney at the site of atherosclerotic lesions.

Multiplicities of factors are involved in the development of this disease. Sex, age, diet, hormones, state of blood protein, and the effects of various drugs must be considered simultaneously. Dr. Anfinsen stated that "though it is far too early to attempt to single out a specific culprit, cardiovascular disease is perhaps not such a hopeless situation for man after all."

Of the million and a half deaths in 1950, over half were due to diseases involving the cardiovascular system. Of these 758,000 deaths, approximately 75 per cent are thought to be a direct or indirect result of the atherosclerotic process.

There is a considerable amount of evidence that metabolic diseases such as diabetes, myxedema, and nephrosis, predispose to atherosclerosis. Well-substantiated clinical observations show that these diseases involve the presence of increased amounts of fat in the blood. In studying the causes of atherosclerosis, the metabolic derangement must inevitably be linked to hormonal factors. Abnormalities in one or more of these factors may well become the center of attention.

Dr. Anfinsen and his research group are investigating an enzymatic system sparked by injection of heparin, which is involved in the normal metabolism of fat, and have obtained suggestive evidence indicating that abnormalities in the enzyme reaction might contribute to the development of atherosclerosis.

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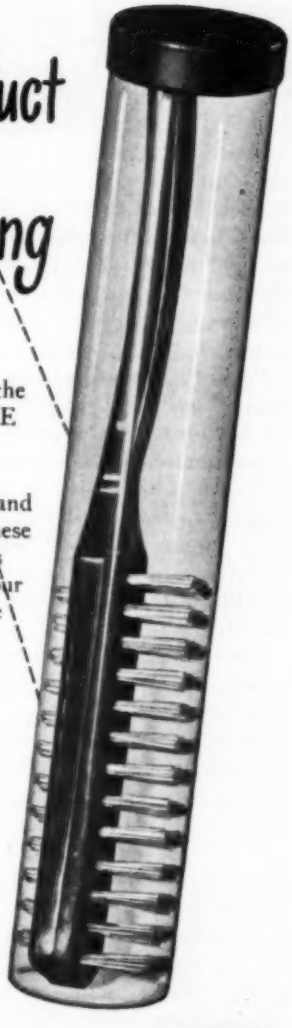

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Stepped-up financial aid by the Government for research has failed to stem the flow of non-federal support, Dr. W. H. Sebrell, Jr., director of the National Institutes of Health, reported. "From 1946 to 1951, while federal support was increasing twenty-fold, there was a simultaneous five-fold increase of funds from private sources. Federal recognition of local ability has often provided a stimulus for increased local aid."

Dr. Sebrell reported on recent research developments:

"Nutrition experiments designed to produce necrotic liver degeneration in rats, a condition apparently related to certain liver diseases in humans, have yielded results that merit mention. Protection of animals against this condition was known to be afforded by two nutrients—vitamin E and cystine. In the NIH studies, a third substance, named "factor 3," was also found to be protective, and has recently been obtained in high concentration from casein and brewers' yeast. Whether the new vitamin-like substance will prove effective against liver disease in man remains to be determined.

"Results in another laboratory will be of value in the study of diabetes. A highly sensitive bioassay has been devised for measuring insulin in blood, using the hypophysectomized diabetic mouse as an indicator. Essentially, the test consists in measuring the fall in blood sugar of mice injected with an insulin-containing specimen—at present, blood from dogs. The mice can be used repeatedly; results are obained in half a day; and as little as three millionths Unit of insulin can be detected.

"In the field of cardiovascular disease, our scientists reported in October that they had isolated from rhododendron leaves a pure compound that lowers blood pressure in animals. It is called "andromedotoxin" and resembles the veratrum alkaloids in physiologic actions. It has a strong but brief hypotensive effect in low doses. Although it has not been tested clinically, we can reasonably assume that it will not cure hypertension but may be useful in lowering blood pressure in certain cases."

Herman C. Nolan, McKesson & Robbins, said:

"During the last few years the expansion of the pharmaceutical industry has reached that stage of intense competition which has been typical of the history of so many other industries. To a business which has been so ethical in its promotion practices, the introduction of bad competitive devices comes as rather a shock. Some of these are as follows:

1. Unsound price cutting.
2. Introduction of free goods in pharmaceutical field.
3. Deals similar to those used in proprietaries and toiletries.
4. Datings to distributors.
5. Mis-use of samples.
6. Delivery of merchandise from salesmen's cars.
7. Duplication of products.
8. Encouragement of pool-buying.

"Despite all the changes in pharmaceutical promotion methods, the industry seems to be moving ahead in sales at a rate which is at least as great as that which the industry has enjoyed during the war and early post-war years. Profits do not seem to be quite as lush but sales have been and are continuing to expand at very satisfactory rates.

"Although the speaker makes no claims of being a forecaster of future trends, it does seem logical to assume that certain changes in pharmaceutical promotion practices are developing. Consumer advertising is expanding, the introduction of new specialties will increase rather than decrease—hospital sales will continue to rise at a more rapid rate than other sales—foreign markets will grow, and if I can be pardoned for getting in a plug for the wholesaler, I think pharmaceutical manufacturers will avail themselves more extensively of the services of the wholesaler."

Up to Date on Shampoos

(Continued from page 45)

use of a buffer in conjunction with them is therefore of greater importance.

There are in addition a large number of non-ionic detergents which are now commercially available which has not as yet assumed too much importance in shampoos probably because of their lower foaming rates as compared to the anionic substances previously mentioned. Their properties are being investigated however as possible additions to shampoos in conjunction with anionic compounds.

It is generally conceded that the ideal shampoo should have a pH on the acid side because the hair responds better at that level than on the alkaline side. A pH of 6 is therefore a highly desirable one. This pH has some difficulties however from the standpoint of stability but it may be more easily accomplished by the use of a weak base such as ammonium hydroxide than by the use of the stronger alkalies. Another objection lies in the inherent inability of acidic systems to produce as fast a foam as can more alkaline systems. Flash foam is a much sought after characteristic and therefore highly desirable. At least one manufacturer has improved this property by the use of compounds containing additional ithoxy groups causing it to be more readily saturated with water during shampooing.[1]

One of the most interesting innovations in the shampoo has been the conditioner. The function of these substances is difficult to define aside from the fact that they are capable of being fixed to the hair shaft by shampooing and after rinsing cause the hair to feel less harsh and be possessed of easier setting and combing properties. It is difficult to envision the mechanism of a system containing these materials unless they do enter into some sort of chemical combination with the hair but there is no doubt of their functional activity since a trained operator can feel the difference between shampoos that do and do not contain them all the time. Consumer tests on shampoos of identical formula with and without conditioners have invariably pointed at the conditioner as being the reason for choice. They are relatively long chained amides whose

activities possibly are dependent on the amidic grouping and which enhance the smoothness of the hair.

Apacifying agents for shampoo, particularly the liquid cream, may be chosen from a large group including ethylene glycol stearate, magnesium stearate and one of a group of ester amides available. The important consideration in this choice is that they do the appropriate apacifying without appreciably decreasing the foaming properties of the shampoo.

The problems found in shampoos are admittedly disconcerting. For example the use of the conditioner presupposes the disposition of a substance foreign to the hair from the shampoo which is directly opposite to the supposed function of the shampoo to clean the hair. The proper amount of these contradictory qualifications are the factors that make for a successful product.

BURSITIS

(*Continued from page 47*)

He stands with the following combination which is administered in capsule form:

Acetphenetidin	**4 grains**
Acetylsalicylic acid	**4 grains**
Cincophen	**2 grains**
Codeine sulfate	**¼ grain**

For ambulatory cases, 1/3 grain of caffeine is included in the combination. The dose is one capsule every three hours. On the second day, the dose may be reduced to one capsule every four hours and afterwards to one capsule four times daily. Later, the cinchophen and codeine are discontinued; the salicylate alone being given.

Physical methods, especially X-ray therapy, enter extensively into the treatment of bursitis. Roengen irradiation, in the opinion of Krabbenhoft and Leucutia,[16] has emerged as a proved conservative method of treatment for subdeltoid bursitis. Others[4,9,14] agree that when roentgen therapy is properly used it is a valuable adjunct in the management of patients with bursitis. In their report on roentgen therapy, Kratzman and Frankel[20] state that in recent years irradiation has become a more popular form of therapy in this condition, especially in its acute form. This procedure, they note, holds a great deal of appeal for both the patient and the physician. For one thing it is painless; involving no dreaded needles, excessive handling, or motion of the painful limb. Moreover, it satisfies the patient's desire for active intervention and it is followed by relief that is often dramatic in its promptness.

In commenting on the benefit of X-ray therapy to acute cases and some subacute cases, Fischer and Leatherman[3] stress that it is very necessary to use some type of heat and exercise following irradiation or else stiffness of the shoulder may ensue in spite of pain relief. Others[12,21,22,23] have similarly stressed that, as the acute stage subsides and the pain decreases, there is a need for continuing the special mild exercises until complete motion and functional recovery is obtained.

The local application of heat, in the form of moist heat, radiant heat or diathermy, is often used to relieve

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DILUTION either solution may be diluted with cold (0-5° C.) water or cold buffer solutions of 5.5 to 7.0 pH. Dilute solutions tend to lose activity and should be used same day. Protein materials (i.e. gelatin) tend to impede this inactivation.

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bursitis. Garrenton,[24] for example, considers diathermy as almost a specific for subdeltoid bursitis. There is quite general agreement that heat is frequently beneficial, if only temporarily, in the chronic cases.

However, there appears to be a difference of opinion regarding such therapy in the acute condition. Thus, in one authoritative source[25] it is stated that diathermy should not be used in acute bursitis because it increases the hyperemia, and this is likely to cause an increase in pain. In contrast is the view expressed in one widely consulted manual[7] on therapeutics. Here it is advised that in treating acute bursitis, diathermy, hot fomentations and gentle massage relieve symptoms by producing a hyperemia. Pertinent in this connection is Fischer's[21] observation that hot applications are most beneficial for the average patient. Warm, moist heat, says he, should be applied continuously day and night in acute cases, but as the acute condition subsides, dry infra-red heat may be substituted.

Other workers[12,13,26] feel that not only is heat contraindicated in the acute phase, but that ice packs give better and more consistent results. Hallstrand[1] advises the use of ice packs during the first day or two in cases of acute subdeltoid bursitis. This is followed by the application of heat later in the course of the disease, as the inflammation subsides.

Other types of physical therapy are sometimes employed in the treatment of bursitis. During the last year or so, ultrasonic energy produced by high frequency sound waves has found increasing application. Schwartz,[27] in reporting on 300 cases, states that most of the patients with bursitis got relief after the second or third "sounding," as the ultrasonic treatments are called. Bearzy's[28] study indicates that ultrasonic therapy is effective in relieving the pain and tenderness of an acute subacromial bursitis. However, such therapy seems to be of little value in the treatment of the chronic condition.

Piersol[29] also states that there is considerable evidence that subdeltoid bursitis, especially in the acute stage, is satisfactorily treated by ultrasonic therapy. He warns, however, that ultrasonic energy can produce irreversible destructive changes. It must therefore be applied with care, in proper dosages and by experienced personnel.

A number of drugs, generally given by injection, are finding valued application for the relief of bursitis. Thus, procaine may be injected into the effected area to relieve pain and spasm and to facilitate other measures. Such an injection into or around the bursa may produce prompt and often lasting relief.[12] Fischer[21] suggests that injections of procaine and sometimes permissible in mild acute cases for relief of pain and for instruction in suitable exercises, with preliminary stretching of the shoulder.

In some cases, the physician may resort to nerve block to relieve pain and spasm. As noted by Duncan,[30] stellate sympathetic block with procaine increases the pulsation, improves the circulation of the shoulder, improves the tissue oxygenation and increases the lymph flow. He warns, however, that this procedure is not without complications.

Gordon[5] similarly warns that stellate ganglion blocks are not lightly to be regarded or performed by untrained operators without supervision. In his hands, this method has proven to be a distinct therapeutic aid in the treatment of both acute and chronic shoulder conditions. The period of distress and disability has been appreciably shortened. This type of treatment, says he, has been given with much less discomfort than local injections into the inflamed part.

Another type of therapy that is attracting considerable attention and producing good results in many cases is the injection of corticotropin (ACTH), cortisone and, more recently, hydrocortisone (compound F).[12,30] Administered chiefly during the painful active stage, these hormones have produced rapid increase in the range of movement and relief from pain.[31] Thus, in six patients treated with corticotropin by Steinberg and Roodenburg[32], five with acute subacromial bursitis obtained complete relief of pain and return to normal function of the shoulder joint. Complete relief of pain and almost complete return of normal function was obtained in the remaining chronic case. This experience, though admittedly meager, suggests that corticotropin is more effective than X-rays in the treatment of the acute condition.

Cortisone has also been recommended[33] as a valuable adjunct in obstinate cases. However, a number of workers have expressed a preference for hydrocortisone. On the basis of his experience with both compounds, Orbach[34] is of the opinion that the anti-inflammatory, anti-allergic, and antifibrotic effects of hydrocortisone are more profound than those of cortisone. In his cases, the administration of hydrocortisone produced a prompt and sustained effect in every instance. Orbach believes that local hydrocortisone injection is the "therapy of choice" for bursitis and will probably render the conventional methods obsolete. The treatment is economical, frequently only one injection is required, and the results are predictable. However, the hormone must be deposited accurately into the inflamed bursa and it must not be diluted.

Hollander and his colleagues[35] have treated various types of bursitis with local injections of hydrocortisone into the bursal sac. In the three cases of acute subdeltoid bursitis, there was complete alleviation of pain and tenderness within three hours, and a full range of shoulder motion was possible without pain. The relief was persistent and no other therapy was used. However, the results in chronic subdeltoid bursitis have been much less satisfactory.

Also indicative are the results obtained by Henderson and Henderson[36] of the Mayo Clinic. Prompt relief of pain and rapid subsidence of swelling associated with inflamed bursae were produced by single injections of hydrocortisone into the swollen area. Of 15 patients treated for olecranon, prepateller, or pretibial bursitis, 13 were relieved of pain by gradual disappearance of fluid. In some instances improvement was noted within

24 hours. These workers believe that the value of this hormone is limited to treatment for traumatic bursitis, and is probably inadvisable for infectious conditions.

Although hardly a newcomer, iron cacodylate still finds employment in the treatment of bursitis. Nearly a decade ago, Pelner[2] reported that iron cacodylate intravenously has given great promise in the diagnosis and treatment of bursitis. Much more recently, Bensema and Shown[10] recommended that 5 cc. of a three per cent aqueous solution of iron cacodylate be administered slowly by injection. This is given daily until there is a favorable response, after which the dose is administered every other day.

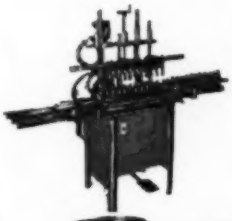
Adenosine-5-monophosphate, available as My-B-Den, is another newer drug that has been of benefit in some cases of bursitis. In tests in which 54 of 60 patients responded favorably to this agent, Rottino[37] found that the first phase in the response pattern was relief of pain. This was followed by return of function, subsidence of swelling and disappearance of tenderness. Usually no more than seven or eight injections were necessary for the acute and subacute cases, but in the patients with a chronic condition the response tended to be less rapid. Since the ameliorative, and possibly curative, effects of adenosine-5-monophosphate are as uniform and dependable as those resulting from X-ray therapy, Rottino believes that this simpler form of medication warranted further trial.

One such trial has since been made by Waldman and Pelner[38] on 26 patients with acute and chronic subdeltoid bursitis. The majority of patients with acute calcified and non-calcified bursitis were benefited, often dramatically. Patients with the acute condition were usually uniformly relieved in from three to six injections. Occasionally patients with long-standing conditions were successfully treated. The mode of action of adenosine-5-monophosphate in bursitis is not clear but it is possible that its effects are similar to those of cortisone.

A few months ago, Klemes[39] presented an indicative report on the use of vitamin B_{12} in the treatment of acute subdeltoid bursitis. He observed that a number of patients with acute shoulders showing calcium deposits were given injections of 1,000 mcg. of vitamin B_{12} according to a definite schedule. The results were most encouraging and, in some cases, quite dramatic. Others who have tried this form of therapy, says Klemes, have obtained good results in acute subdeltoid bursitis when the full, rather than "small, timid" doses were given.

It is noteworthy that a combination of vitamin B_{12} and adenosine-5-monophosphoric acid is now available commercially for the treatment of bursitis and osteoarthritis. Called Cobaden, it is administered as a daily intramuscular injection. It is claimed that striking relief usually occurs after five or six injections of this combination into patients with bursitis.

Mention should also be made of Houston's[40] note on the use of procaine penicillin in treating acute bursitis. During a period of four years, he and his associates have treated about 60 patients with acute subdeltoid



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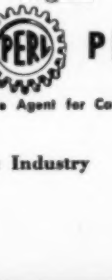

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bursitis, three with suprapatellar bursitis, two with Achilles tendon bursitis or tenosynovitis, and two with trochanterian bursitis with procaine penicillin. In most of the acute cases of four to ten days' duration the results were uniformly and dramatically successful after three or four intramuscular injections. Recurrences were rare in this group. In cases of longer duration, five or six injections have been required, and recurrences were somewhat more frequent. As with other agents, the mode of action of procaine penicillin, in cases where infection has not been demonstrated, is not clear.

Where conservative measures are ineffective, it is sometimes necessary to employ other methods. Thus, in acute bursitis with some calcium in the fluid within the bursa, elimination of tension due to the pressure of the fluid contents of the bursa is said[25] to afford the quickest possible relief. This can be provided by injection of procaine and repeatedly needling the bursa to make small openings, so that the fluid may leak out into the surrounding tissue where it may be picked up by the circulation.

The proportion of good results following this procedure is estimated as about the same as the results obtained when two needles are used and saline or procaine solutions are washed through the bursa. Both needling of the calcium deposit or washing out the bursa with saline irrigations are painful procedures. Hence, it is advised[3] that these treatments are best carried out in a hospital because the pain returns after therapy and the patient should be near where plenty of sedation can be given.

In other cases it may be considered more advisable to obliterate the bursal cavity by aspirating the exudate and injecting a sclerosing fluid.[41] A five per cent solution of sodium morrhuate or other acceptable sclerosing material may be injected into the sac. A snug-fitting compression bandage is then applied over the bursa. Pain often occurs after this form of treatment and analgesics may be required.[7] Apfelbach[8] feels that while sclerosing solutions may obliterate the swelling, they hide the etiology and do not remove foreign bodies. Recurrences and disabilities, says he, are common complications.

When other measures have failed, special surgery is indicated for removal of calcareous deposits or even of the entire bursa. According to Fischer,[21] if large or moderate-sized calcium deposits are associated with severe acute symptoms, surgical evacuation of the bursal contents is the best method for the relief of pain. Postoperatively, appropriate exercises are begun to strengthen the muscles and prevent stiffness. Such exercises are continued until free motion is obtained.

The treatment of bursitis, like the therapy of many other disorders, is going through a series of changes. New drugs are being tried in the treatment of this condition and it is quite probable that continued research may lead to the discovery or development of more specific - acting agents for this increasingly common disorder.

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SPECIAL PROBLEMS IN ODOR PERCEPTION

(*Continued from page 49*)

scent—due to the presence of the hydroxyle group—certain people perceive it as akin to musk. Others can no longer smell it and this is why Guillot talks of an anosmia in this case.

To sum up—it would seem necessary for an odor to be perceived that the number and quality of the osmophor groups should be in a given ratio to the rest of the molecule. If this ratio varies beyond certain limits the perception of odor ceases.

The cessation of odor, however, is not always so clear-cut. In the case of olfactory fatigue, for instance, it would seem that, as a rule, the odor disappears gradually; for it to vanish suddenly is an exception. Fatigue, therefore, is only a particular case of the more general problem of the cessation of odor perception.

Woodrow & Karpman[10] have already shown that the adaptation time for olfaction, i.e. the time required for the olfactory sensation to cease completely, is inversely proportional to the vapor tension of the odorous material. Now, all perfumes of musk, amber, etc. belong to the class of substances with a minute vapor tension; consequently, it is for these products that the highest adaptation time should be recorded. In our case, however, the contrary seems to occur. The substances with high molecular weight are also those which fatigue the smelling sense most rapidly. We have already mentioned that these products are at the limit

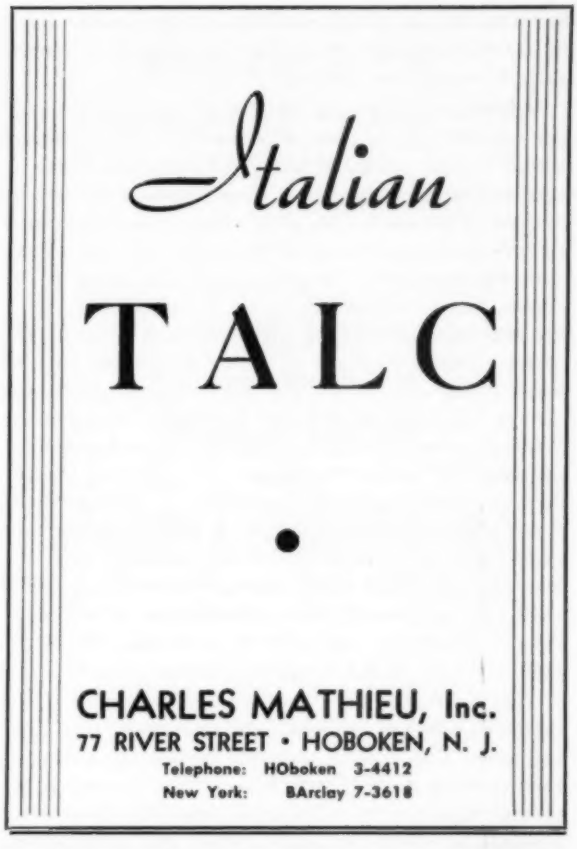
of perceptibility because of their high molecular weight. As queer as it may sound, it is also among them that one finds the products which can be smelled in highest dilution. It is as if stimuli coming from big molecules were the most efficient in producing odor perception on the one hand and fatigue on the other. This makes me believe that the odor perception ceases with increasing molecular weight, not only because of the small vapor tension leading to the rarefaction of the molecules in the nose but also, and perhaps essentially, because of fatigue.

The amber-scented epoxides mentioned above are most interesting in that respect. The chemists who prepared them could never perceive their odor; their attention was drawn to it by people coming to their laboratories from outside. Even professional perfumers were unable to smell them in the beginning, but by training they succeeded in perceiving the odor, even very pronouncedly. These substances possess, in fact, a very strong diffusing power. If a blotter is dipped into a 10-per-cent alcoholic solution of the said epoxides and put in a large room, the whole room starts smelling of amber. If one stays in the room, the amber smell ceases to be perceived after a short time; even the blotter is apparently without scent. This is why one does not smell these products when working with them.

Other products with constitutions similar to that of these epoxides behave in the same way. They all have 16, 17 or 18 carbon atoms in their molecule and when mixed with other perfumes, their olfactive power becomes very great. All these phenomena raise difficult problems. In the case of volatile molecules, fatigue results from too great a number of molecules hitting the receptive centers; the centers become tired little by little. With heavy molecules, however, which certainly do not enter the nose in too great a quantity, the process must be different. I would suggest tentatively that fatigue is related in that case to the adsorption power of the molecule.

Adsorption power is the strength with which a molecule is fixed on the surface. Big molecules and hydroxy groups have a greater adsorption power than small molecules and, for instance, oxido groups. If the molecules remain for a relatively long time on the receptive centers, for example as a result of lack of water molecules in too dry a nose or because of the constitution of the molecule, it may happen that the adaptation time becomes shorter than the time necessary for perceiving the odor. In other words, the nose gets tired before it has had time to perceive the smell.[11] We either observe an anosmia, affecting some people and not others, or the substance is odorless for everybody.

In the case of the four amber-scented epoxides mentioned above the adsorption power increases with the molecular weight until for sclareoloxide the odor disappears completely. If we further add to the nonodorous sclareoloxide molecule a second osmophor, which does not increase the adsorption power, the odor reappears for those individuals for whom the relation between the influences coming from the osmophors



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and from the rest of the molecules plays a greater part in the formation of odors than the adsorption power with its consecutive fatigue.

It remains to be explained why the scent of big molecules is stronger in great dilution than when concentrated. In my opinion a heavy concentration works in this case in the same way as the removal of the source of odor. The nose is filled with a moist atmosphere and the odoriferous molecules entering the nose are mixed with this moisture. A great number of them is, of course, lost by dissolution in the nasal mucous; as to the remaining ones, when they reach the olfactory receptive centers they are at once driven away by the water molecules. In this way the receptive centers are always kept fresh and ready to receive new stimuli. When the adsorption power of the odoriferous molecules increases, the latter stay longer and longer on the receptive centers and to displace them, increasingly more water molecules are needed, just as in the case of steam distillation. If a large number of big molecules enter the nose the number of water molecules is no longer sufficient to expel them rapidly. Thus fatigue would occur because molecules with a heavy molecular weight remain too long on the receptive centers.

Another interpretation of fatigue might be given without introducing the notion of adsorption, by simply supposing that a large molecule excites the receptive centers more strongly than a small one, because of its greater contents of vibrational centers. The latter hypothesis which, moreover, does not exclude the former, brings us to the heart of the olfactive problem; namely, how can a molecule express its form and constitution, embodying all the details we know, and how can it forward this detailed picture of itself to the brain so that the latter can distinguish molecules very closely related?

E. Landau[12] has shown that the structure of the olfactory mucous membrane is similar to that of a retina. It is, therefore, possible that molecules convey their structure and with it their odor by means of certain sets of vibrations just as visible objects transmit their shape and color by means of a series of light waves; but, whereas the eye possesses an optical system which enables it to differentiate the light waves and thus obtain a clear vision, the nose does not seem to possess anything of the kind.

Adrian[13] has shown that a stimulus given to an olfactory receptive center is transmitted to the brain by only one sort of impulses of a given frequency. Since we cannot see how a molecule could transmit a finely detailed picture of itself by means of a single impulse in a single nervous fibre, we have to admit that a molecule strikes a series of receptive centers which transmit a whole set of impulses through a very complicated nervous system (see Landau l.c.) to the brain where all these impulses are associated into a single odor perception.

It is difficult to imagine how the molecules put the receptive centers into action because, as long as we do not know either the chemistry or the histology of the receptive nervous cells better, we cannot imagine how they function. In regard to the receptive organ, therefore, the point remains obscure. In regard to the molecule, we may venture a hypothesis.

In order that a molecule should be able to convey to a nervous system the picture of its global form as well as the finest details of its constitution, I cannot see any other mechanism than molecular vibrations on the one hand and atomic and electronic vibrations on the other. Molecules enter the nose in fairly great numbers $(10^9)^{14}$ and approach the receptive centers in all possible positions so that each point of the molecule may come into contact with a center; thus all points in the molecule are able by an unknown process to transmit their specific vibration to the nervous system. But each molecule is very soon displaced by water-molecules and either expelled from the olfactory zone of the nose or transported to another receptive center where it finds a new sphere of action. By this process the frequency of impulses changes continually in each nervous fiber, thus postponing fatigue. But the sum of all impulses remains the same and, once associated by the brain, produces the same perception of odor.

We are thus led to define odor perception as the sum total of associations of a series of impulses of varied frequency generated in nervous fibers by the various molecular, atomic and electronic vibrations of a great number of molecules during their short contact with the receptive centers.

As we have already mentioned, for an odor to be produced the number of the various constituents of the molecule should be such that a certain ratio exists between the corresponding vibrations. If we have, for instance, a big molecule which contains only CH_2 groups, the odor ceases because fatigue results from too uniform an excitement. If an osmophor group is added to that molecule the uniformity is broken, fatigue is avoided and the odor comes out again. One might believe that, by adding further osmophors, the intensity of the odor would still be enhanced but this is only partly true. Osmophors, with only rare exceptions such as the ether- or epoxide-groups, increase considerably the adsorption power of the molecules and reduce their vapor tension, so that the intensity of the odor is seldom reinforced by accumulating them. We have seen above that an hydroxyle osmophor is not sufficient to give an odor to a cyclopolymethylenic substance. If, however, a ketone group is introduced besides the hydroxyle (cyclic acyloines)[15] the odor, although weak, reappears in spite of a smaller vapor tension and a stronger adsorption power. This illustrates clearly the necessity for the impulses to be sufficiently varied.

A few consequences may be drawn from the above way of interpreting the mechanism of odor perception. It is clear that the same osmophor group will act differently in a big molecule and in a small one, a fact which is well recognized nowadays. Furthermore, it can be expected that in the case of a very large number

of molecules entering the nose (i.e. in the case of a concentrated perfume) a certain number of receptive centers become tired and, therefore, out of action. Consequently the set of impulses reaching the brain is altered and gives rise to a different odor. In other words, the odor changes with the dilution, also a well established fact. Finally, one can imagine that some substances chemically quite different may produce in the nervous system sets of impulses which, when associated in a single odor perception, produce the same impression, at least approximately (nitro-musk and megacyclic musk).

I have been concerned so far with the molecule end of the problem. A physiological and psychic side is also involved. On this, very little work has been done so far.

Le Magnen,[16] however, has brought forward a number of facts. He carried on experiments with our Exaltolide, which is perceived much better by women than by men. Out of 25 men and 25 women, 18 men and four women did not smell Exaltolide at all, or smelled it only very feebly; five men and three women smelled it feebly; two men and 11 women smelled it strongly; no man was able to smell it violently whereas seven women could.

Le Magnen went further:[17] by means of the olfactive threshold method, he tried to determine the sensitivity of women towards Exaltolide, testosterone and safrol during the genital cycle. He observed, for instance that receptiveness to the smell of Exaltolide varied greatly. It was least acute just before menstruation. Afterwards, it increased slightly without exception and then, within one or two days, it went up sharply. In one case, it increased 100,000 times—to fall down again rapidly to the minimum before the next menstruation. For testosterone, the curve is less sharp but its variations are very similar. For safrol, there is no variation during the cycle. Le Magnen showed that the maximum, which is not always so clearly marked as in the case he published, corresponds roughtly to the date of ovulation. There is, therefore, no doubt that the sensitivity of women to the perception of Exaltolide goes up or down considerably according to the quantity of oestrogene hormones contained in the blood.

Le Magnen also experimented on himself with injections of hormones, at one time oestrogene, and at another androgene; his receptiveness to the perfume of Exaltolide was enhanced in the first case and reduced in the second.

The fact that the receptiveness to Exaltolide increases sharply at the time of ovulation shows clearly the function of the megacyclic musks in nature as sex-attractive substance. I recall that a similar role is sometimes connected with colors. For instance it is the color safran or crocine, which enables the alga chlamysomodas, Engametos simplex,[18] to become mobile and move in the direction of the opposite sex for coupling. The necessary quantity of crocine is so small that with five molecules of it, four cellules of alga may be activated. This shows what refinement nature may use to reach its aims. In the field of odors, the smallest

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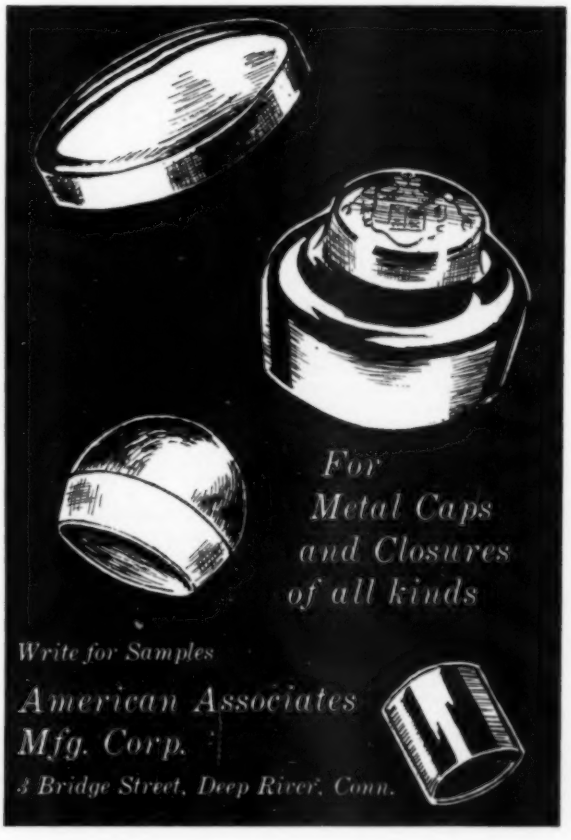

number of molecules necessary to create a definite sensation of smell is about 10,000,000, but usually the number involved is much greater.

Le Magnen discussed the perception of musky odors from the intensity point of view only. We examined it with the criterion of an agreeable, or of a disagreeable, sensation. Most men find the smell of Exaltone, Muscone and Civettone agreeable but not extraordinary, rather queer, different from all other perfumes. Most women, on the contrary, have a distinct predilection for these perfumes. For them, physiological sensitiveness is accompanied by a sensation of pleasure, even joy, but only when they are smelled in great dilution.[19] This sensation reaches its highest level with the natural musks, Civettone, Muskone, Exaltone, Exaltolide and Ambrettolide. Maybe this curious predilection is due to an ancestral inheritance.

Thus, the discoveries of Le Magnen tend to emphasize the part played by psychism in the perception of odors. He has established beyond doubt that the perception of certain odors is connected with hormonal equilibrium. We do not know, it is true, how this equilibrium works itself out on the smelling sense, but we may suppose[20] that psychic factors influence the process in a prominent way since only quite special odors are affected.

If this is so, all the hypotheses which we have put forward have to be qualified in the sense that psychic factors can always modify the association of the many sensations brought to the brain by the nervous fibers.

As may be seen, all these considerations do not simplify the problem of odor perception, but I hope to have stressed a few important points and given some new ideas on this extremely complex, but tremendously interesting subject.[21]

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SELECTIVE MEDIA IN STUDY OF ORAL FLORA

(Continued from page 51)

The study of the oral flora and particularly in most investigations into the etiology of dental caries and the effect of chemotherapeutic and antibiotic agents on these mouth organisms, has been greatly simplified by the use of certain selective media. The following are the most noteworthy.

Snyder's Medium

One of the most useful media is that proposed by Snyder (1940, 1941). It contains dextrose as the fermentable carbohydrate, brom cresol green as the indicator, and is adjusted to pH 4.8 to allow the growth only of acid tolerant microorganisms. It is used primarily for the qualitative estimation of such organisms in saliva which provides a reliable index of caries susceptibility. Specimens of saliva (0.2 ml) are inoculated into 10 ml amounts of melted Snyder test agar at 45° C., mixed thoroughly, and incubated at 37° C. for 24, 48, and 72 hours and any change in the color of the medium noted.

Correlations have been made between changes in color and caries activity as determined by dental examination. Interpretation of the test is as follows:

Caries Activity	Hours of Incubation		
	24	48	72
Marked	+	+	+
Moderate	0	+	+
Slight	0	0	+
Negative	0	0	0

+ Acid produced.

Correlations have also been made between lactobacillus counts and the color changes produced in the Snyder medium. It has been shown that specimens of saliva containing up to 1,000 lactobacilli per ml. caused color changes in up to 3.2 per cent of the specimens in 24 hours whereas specimens containing from 10,000 to 100,000 lactobacilli per ml. caused color changes in 13 and 47 per cent, respectively, in 24 hours. The color changes in 48 to 72 hours showed proportionately different lactobacillus counts.

Snyder's medium, therefore, is selective for aciduric microorganisms but in a qualitative, rather than quantitative, way. However, the results are useful in indicating the degree of susceptibility to dental caries.

Tomato Juice Agar

Another medium which is selective for acid-tolerant organisms, and which gives quantitative results is tomato juice agar as modified by Hadley (1933) and recommended by Jay (1938, 1949). This medium contains tomato juice, peptone, peptonized milk, and agar

and is adjusted to pH 5.0. Suitable dilutions of saliva and mouth rinses are plated in this medium, incubated at 37° C. for 48 hours, and counted. The total count gives the total number of acid-tolerant organisms but does not differentiate the species of organisms present.

Rogosa Agar

Rogosa et al. (1951) reported that in addition to lactobacilli, tomato juice agar also supports the growth of yeasts, molds, streptococci, etc. They devised a medium which is selective for lactobacilli only and which provides quantitative counts of this genus. It contains tryptose, yeast extract, glucose, different acids and salts, and agar, and is adjusted to pH 5.4. When suitable dilutions of saliva and mouth rinses are plated in this medium and incubated at 37° C. for 48 hours, only lactobacilli will grow, such as *L. acidophilus*, *L. casei*, *L. fermenti*, etc. Colony counts of saliva and oral rinses give quantitative numbers of the lactobacilli present.

Mitis Salivarius Agar

A medium selective for non-hemolytic streptococci has been developed by Chapman (1946a, 1947). This medium contains tryptose, peptone, dextrose, saccharose, dipotassium phosphate, trypan blue, crystal violet and agar to which potassium tellurite is added after cooling to 45° C. The final reaction is pH 7.0. While this medium does not support growth of aciduric organisms, it is useful for determining quantitatively the numbers of non-hemolytic streptococci in saliva and oral rinses. Since streptococci may be involved in tooth decay and are considered etiologically important, this medium is useful in determining the effects of chemotherapeutic and antibiotic agents used in preventing this condition, as well as other oral infections caused by streptococci.

Staphylococcus Medium No. 110

Chapman (1946b, c) developed a selective medium for staphylococci. It contains tryptone, yeast extract, mannitol, NaCl, K_2HPO_4, gelatin, and agar, adjusted to pH 7.0. Since only staphylococci grow on this medium, quantitative counts of these organisms in saliva and oral rinses can easily be made. It has the added advantage that pathogenic and nonpathogenic staphylococci are accurately differentiated on the medium, producing pigmented and white colonies respectively. While these organisms are not numerous in the normal mouth, they are found in certain infections of the oral cavity.

Malt Extract Agar

Since yeasts are considered important in dental caries, it is of interest to determine the presence and

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numbers of these organisms in the mouth. This may be done by the use of malt extract agar developed by Reddish (1919). This medium contains maltose, dextrin, glycerol, peptone, and agar and is adjusted to pH 4.6. Only yeasts grow in platings made from diluted saliva and oral rinses and the counts are quantitative. The relationship and correlation of such quantitative yeasts counts to caries susceptibility is useful in the study of the etiology of dental caries.

In addition to studies on the etiology of dental caries, these media are useful in following the effects of oral hygiene practices and the clinical use of chemotherapeutic and antibiotic drugs. Each medium serves a separate and distinct purpose. Taken together the results from each gave a fairly complete cross section of the oral flora as it pertains to dental caries especially and may be useful in general studies of the oral flora.

Nutrient Agar

Although nutrient agar is not a selective medium, counts of saliva and oral rinses in this medium are often useful for so-called "total" counts. Since many of the organisms which grow on selective media do not grow on nutrient agar, such counts are not really total counts. However, this medium is often used since many of the non-aciduric organisms and others grow well and the counts can be considered as indicating a general purpose index.

III. Interpretation of Results

Interpretation of results obtained by the above methods must be considered in two categories, namely (1) sampling procedures and (2) media used.

(1) Of the four sampling procedures discussed, it is evident for reasons given, that the rinse method is preferred to the other three. The rinse method is more accurate and results can be more readily duplicated. The reason for this is that a definite quantity of saline rinse is employed for a specified period of time, and the mouth rinsing or gargling procedures can be easily simulated by the same individual and even by different subjects. Effective and accurate sampling of the oral flora is thus possible since the bacteria on the mouth and throat surfaces are removed and suspended in the rinse solution. Uniform suspensions and accurate dilutions can then be readily secured from which platings can be made.

It must be emphasized, however, that neither the mouth rinses nor throat gargles remove all the bacteria in the mouth or throat. It is understood, of course, that the numbers and kinds removed constitute a function of those that were present on oral surfaces at the time of the tests, and constitute an index of those that remain on these surfaces. Bacterial counts of the rinses are only relative and do not represent the total numbers of bacteria in the oral cavity. However, the relative effectiveness of oral hygiene procedures and the prophylactic and antibacterial measures can be evaluated by determining the proportionate changes in the kinds and numbers of bacteria following the use of such measures. The rinse method is quite satisfactory for this purpose and the results may be interpreted accordingly.

(2) The bacterial counts obtained in the different media used may be interpreted in a similar manner. The numbers of aciduric organisms, the lactobacilli, streptococci, staphylococci, and yeasts, as well as the so-called "total counts" must be considered as an index of the numbers of each present on oral surfaces at the time of each test rinse.

The actual relationship between each of these kinds of bacteria are only approximate; that is, they are relative one to the other, and to the "total count." The media used are of considerable value, however, in estimating the relative numbers of the different kinds of bacteria present on the mouth and throat surfaces at the time the rinses are made. Such quantitative counts made before and after oral hygiene measures result in an index as to the relative value of such antibacterial agents. Therefore, the relative effects of prophylactic and therapeutic measures can be compared and evaluated. When results on these different media are interpreted in this manner, much valuable information can be obtained in the study of the oral flora and the relative value of different hygienic measures determined.

Summary

1. The rinse method is the most satisfactory and accurate sampling procedure for use in studies of the oral flora.

2. The following media are useful for studying the oral flora, especially as related to the etiology of dental caries and the use of chemotherapeutic and antibiotic drugs in the oral cavity:

Snyder's medium for qualitative determinations of aciduric organisms.
Tomato juice agar for quantitative determination of aciduric organisms.
Rogosa agar for lactobacilli.
Mitis salivarius agar for streptococci.
Staphylococcus medium No. 110 for staphylococci.
Malt extract agar for yeasts.
Nutrient agar for non-specific general "total" counts.

3. The results obtained by means of the rinse sampling method and the special media employed are a function of the numbers and kinds of bacteria present in the mouth and throat at the time the rinse samples were obtained. The relative effects of prophylactic and therapeutic measures can thus be compared and evaluated.

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Patent Thoughts and Trends

(*Continued from page 109*)

leasing it relatively slowly into the patient's blood stream, and provided substantially prolonged blood levels, up to 24 hours following the standard 300,000 unit (1 cc.) injection, as compared with predecessor techniques or preparations. However, apart from its blood level prolongation, POB had a number of serious disadvantages in administration and use. In its early forms POB was so viscous at normal room temperatures that it had to be heated in the vial for some time before each withdrawal and injection, with the danger that the penicillin would be decomposed by overheating or the material made so hot as to be uncomfortable when injected. Vigorous shaking was needed to provide uniform viscosity and to resuspend particles of penicillin which had settled to the bottom of the vial on standing.

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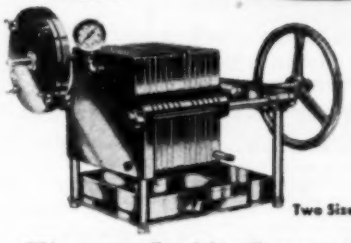

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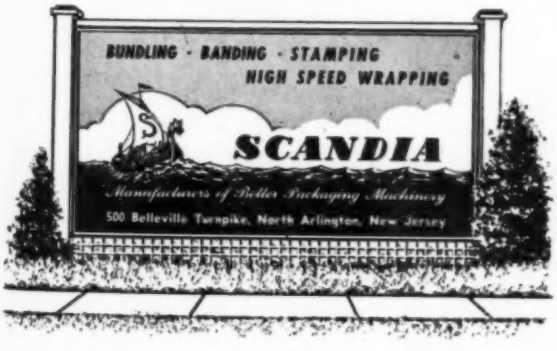
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